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ABSTRACT

The first in a 10-volume report, this volume provides an overview of the NETWORK school improvement study as a whole, placing it within the context of federal dissemination-related school improvement policies and programs. Existing research on these programs is examined and synthesized, and the evolution of the federal role in dissemination is traced. Also, Volume I outlines the objectives of the study, specifies and characterizes the sample, and describes the design and overall approach in detail. The study employs "state-of-the-art" data collection and analysis methodologies, including the development of "Practice Profiles" for each of the 61 practices studied, assessment of "Levels of Use" for each of the 315 teachers, content analysis of all interviews, use of causal models to determine factors influencing outcomes of school improvement, and development of unique qualitative approaches to analyzing field data. Sample schools (146) were selected for the study from those involved with 4 different federal school improvement strategies: interpersonal linkage of validated practice, commercial distribution, state administration of dissemination, and local development and invention. Data were collected at all levels of education--from federal program officers to teachers--and were subjected to a wide range of analyses, resulting in an indepth understanding of implementation and institutionalization processes. The volume concludes with a discussion of the pros and cons of the study's approach and design. (TE)

People, Policies, and Practices: Examining the Chain of School Improvement, Volume I

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Setting the Stage for a Study of School Improvement

EA 016 480

Volume I

Setting the Stage for a Study of School Improvement

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**A STUDY OF DISSEMINATION EFFORTS
SUPPORTING SCHOOL IMPROVEMENT**

**David P. Crandall, Ed.D.
Principal Investigator**

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Andover, Massachusetts**

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PREFACE

The Study of Dissemination Efforts Supporting School Improvement was a comprehensive, three-year examination of a broad spectrum of federal and state dissemination activities. It included a close look at selected strategies designed to improve schools by promoting the adoption and use of new educational practices developed with federal support. Sponsored by the Office of Planning and Evaluation of the U.S. Department of Education, the study was conducted by The NETWORK, Inc., in collaboration with several other research and development organizations, including the University of Texas' R&D Center for Teacher Education, the American University's Knowledge Transfer Institute, the Center for Policy Research and UCLA's Center for the Study of Evaluation.

The study examined four distinct levels of the educational system: federal, state, external agent, and local. A "zoom lens" design began with an overview of forty-five programs in the U.S. Department of Education that engaged in dissemination or dissemination-related activities. Fifteen of these programs were selected for in-depth analysis at the federal level. At the state level, we examined dissemination activities in ten states representative of the continental forty-eight.

Four strategies, each reflected in a selected federal program, were chosen for in-depth investigation at the local level. The strategies, and their programmatic exemplars, are:

- Interpersonal Linkage of Validated Practices, exemplified by the National Diffusion Network (NDN), including its ESEA Title I subnetwork
- Commercial Distribution, exemplified by the Bureau of Education for the Handicapped Marketing Program
- State Administration of Dissemination, exemplified by ESEA Title IV-C Adoption Grants
- Local Development/Invention, exemplified by ESEA Title IV-C Development Grants

A close look at 146 schools and school districts in the ten states, whose improvement efforts were supported by one of these programs, allowed us to answer three important questions:

1. To what extent are new practices supported by the federal programs being implemented in schools?
2. What factors influence successful implementation?
3. How are policies, conceived at one level, implemented at other levels?

Because three of the four programs chosen rely on implementing practices developed outside the local setting, we were interested in the vehicles employed by the programs for dissemination, particularly the assistance provided by external agencies and individuals.

Focusing-in the lens one more time, we conducted an intensive field study of twelve of our local sites over the course of a school year. Here, we were able to examine the interpersonal and organizational dynamics surrounding implementation as school people worked to incorporate innovative practices.

The study as a whole was a massive effort that required the energies and resources of countless people. Altogether, we:

- interviewed and surveyed over 5,000 educators;
- accumulated over 1500 hours of interview tapes;
- spent over 700 person-days "on the road;"
- made approximately 150 observations; and
- analyzed over 400 documents.

The three years were spent in design (Year 1), data collection (Years 1 and 2), and data analysis (Years 2 and 3).

The master report, People, Policies, and Practices: Examining the Chain of School Improvement, consists of ten volumes which describe the results of the study. Volume I (Setting the Stage for a Study of School Improvement) sets the study within a framework of federal school improvement policies and past studies of these policies. The objectives, design, and research methodologies used in the study are also described.

Volume II (Portraits of the Changes, the Players, and the Contexts) describes what was found in the 146 school districts that comprised our local site sample. Characteristics of the people, the innovations, and the settings are reported, as are the contributions of external assistance and the outcomes accrued from involvement in school improvement.

Volume III (Models of Change) introduces the causal models of the school improvement process that helped us determine what factors influenced success. The findings are reported for several outcomes at both the organizational (school) and individual (teacher) level.

In Volume IV (Innovation Up Close: A Field Study in Twelve School Settings), we examine the dynamics of twelve districts -- varying in experience with the new practices, in community type, and in the scope of their efforts -- involved in improvement efforts supported by the National Diffusion Network or ESEA Title IV-C

Local Development Grants. The volume provides an in-depth picture of the motivations, behaviors and aspirations of school people as new practices are implemented and maintained.

Volumes V, VI and VII analyze the government's role in dissemination for school improvement. In Volume V (Dissemination for School Improvement: An Analysis of Nine Federal Education Programs), we profile nine widely different federal programs sponsored by the then U.S. Office of Education. The volume examines the assumptions underlying the programs, and how these shaped each program's dissemination strategy.

In Volume VI (Dissemination at the National Institute of Education: Contending Ideas about Research, Practice, and the Federal Role), six federal dissemination programs funded by the NIE are examined. We tell the story of the programs' emergence, implementation, and -- to the degree possible -- impact, and discuss implications of the programs for the federal role in dissemination.

In Volume VII (Configuration of Federal and State Dissemination Activities), we present a comparative analysis of federal-state relationships for dissemination and school improvement in our ten sample states. We examine the impact of federal initiatives and other critical influences on the roles and operations of state education agencies.

Volume VIII (The Infrastructure of Innovation: The Case of the National Diffusion Network) examines the communication and rewards structure of a single federal program -- the National Diffusion Network. We examine the NDN as a decentralized service delivery system which has evolved to a grass-roots effort with greatly reduced dependence upon federal leaders for direction and control. Network analysis, based on a census of all members and adjuncts of the NDN, provides interesting insights into a unique federal program.

Volumes IX and X summarize our efforts. Volume IX (Implications for Action) integrates findings from all components of the study, and discusses implications for policy and practice at all levels of the educational enterprise. Volume X, our Executive Summary, provides a distillation of study methods and findings for a general audience, as well as an annotated bibliography of the report series and related study documents.

ACKNOWLEDGEMENTS

The Study of Dissemination Efforts Supporting School Improvement engaged literally a cast of thousands. At the peak of activity, it involved some 5,000 educators from all parts of the country, with a wide range of roles and responsibilities, whose only commonality was the desire to improve the education of our nation's youth. Although it is impossible to personally thank everyone, we pause here to acknowledge their important contributions.

Our Project Officer: Ann Bezdek Weinheimer, for her superb guidance and unending support;

Our Policy Advisory Group: Dave Clark, Ellie Farrar, Michael Fullan, Hendrik Gideonse, Egon Guba, Milbrey McLaughlin, David Wiley, and Ward Mason, for their help in conceptualization and design, and their thorough and honest feedback;

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Our NETWORK Support Team: Pat Bales, Margaret Broderick, Ronna Coppola, Kory Hellmer, Clif Lund-Rollins, Elsa Martz, Nancy Lund, Nick Thorkelson, Annmarie Lenson, and Ruth Anne Shepard who edited, typed, organized, copied, served, drew, retyped, collated, hustled, and cleaned up after us times too numerous to mention, for all of that and more;

And finally, to the people who other studies label "respondents" but whom we considered and related to as "collaborators": over 4,000 teachers, nearly 400 building and district administrators, 100 people in external assistance roles, 50 personnel in ten state departments of education and 100 federal program staff, for their dedication to making schools a better place for people, and helping us learn the good news:

SCHOOL IMPROVEMENT EFFORTS ARE ALIVE AND WELL
IN SCHOOLS ACROSS THE U.S.!

And, on a more personal note:

They said it couldn't be done; parts of it, yes. The whole humongous thing? No way! But we believed, we persevered, and we succeeded.

Managing (producing?) an enterprise of this scale and complexity was not unlike being entrusted with a string of race horses while also being expected to efficiently operate race tracks all over the country. One's charges must run, sometimes for practice, sometimes in claim races, sometimes for fun, and sometimes for substantial purses. At the tracks, stands must be cleaned, popcorn purchased, receipts counted, special events trumpeted, sound systems repaired. Oh yes, add to this the necessity of producing a comprehensive story of each season's successes (and failures), with appropriate statistical detail for the aficionados and photos for the occasional attendee. Perhaps such images will help you connect with the range of reactions I have had to this point, when all that remains of the season is the final manuscript which down-plays the thrills and recalls the tribulations.

Although flashes of Hercules and his labors in the stables come to mind, as do painful recollections of the occasional reluctance of the imported studs to perform as desired, and more than a few false breaks at the gate, overall I am immensely satisfied with both the process and the product of our collective odyssey. On balance, it was a frolic with a wonderful group of thoroughbreds.

All the players in our production performed admirably; their contributions were manifold. Three are worthy of special mention, one whose contribution was the necessary catalyst at the front-end, enabling our adventure to commence and continue; one whose firm hand kept us on our course; and another whose contribution at the back-end ensured the successful conclusion and chronicling of our journey with style and substance. My very special thanks to:

Ann Bezdek Weinheimer, whose courage in championing our unconventional approach launched us on our journey with confidence. During the study, Ann was our trailblazer and guide through the bureaucratic thickets. We benefited mightily from her detailed and hard-hitting critiques, her unwavering support for our efforts through the low moments and her praise at the high ones. Perhaps most of all, we treasure her belief in us and her infinite patience.

Joyce Bauchner, whose truly special ability moved us from abstract conception to earthly operation. Her commitment to task execution and consummate attention to detail served the study better than the best Master Sergeant. (Plus she's incredibly bright and doesn't smoke cigars.) Her formal titles and responsibilities belie the breadth and depth of her contribution to thinking up and working through this massive endeavor. As she remarked more than once, "Well, no one has ever done this before, but let's get on with it." And we did. My plans and our various teams' intentions, difficult as they were to arrive at, were just the first step. Seeing that they were carried out, by dispersed groups in six locations, on time and budget and in keeping with the overall conception was up to Joyce. Without her we'd still be picking up the stragglers and searching for the lost interview tape.

Susan Loucks, whose capacity for concentration, sustained high quality output and tolerance for my idiosyncracies is surpassed only by her unparalleled modesty, calm and good humor, is the single most important reason that the complex innovation of this study is represented through its master report series and numerous other publications. Individual authors have each made significant contributions in their own right. Weaving individual strands of reasoning into a coherent fabric that is both sturdy and stylish stands as the latest in a string of behind the scenes contributions that have been too often unacknowledged. Hers has been the longest and hardest race of all, because it's been run after the others have bedded down and the spectators have left the track. Had this been a race for the roses, the bouquet would belong to Susan.

Each has contributed in a special way to my realizing a major dream. From a field of exceptionally talented thoroughbreds, they have been a trio of true believers. Without these three, it wouldn't have happened; with them, I would try anything.

David P. Crandall, Ed. D.
Principal Investigator

SUMMARY: VOLUME I

In 1965, with the passage of the Elementary and Secondary Education Act, the US government began a 15-year period of unprecedented federal activism in education. By the late 1970s, millions of dollars had been spent to improve education through a wide variety of mechanisms, strategies, and programs. The primary approach taken to stimulate improvement had evolved from providing "seed money" for the development of demonstration projects, to the dissemination of practices developed and proven successful in one setting to other similar settings. At this point federal officials paused to take stock. Exactly what had transpired in their efforts to improve schools, and with what effects?

The Study of Dissemination Efforts Supporting School Improvement was funded in 1978 to answer these questions, especially as they related to the role of dissemination of new practices as an approach to educational improvement. Such a comprehensive look across the wide range of dissemination activities had not as yet been undertaken. The study's objectives were to examine dissemination and dissemination-related programs at the federal and state levels, and to trace several such programs to the classroom, looking for effects on teaching practice and for factors contributing to program success.

Volume I begins with an examination of the federal role in dissemination, how that role evolved and how different federal programs operate their dissemination activities. A discussion of the research conducted on these programs suggests the need for a broader, and at the same time, more intensive, examination of how the activities of dissemination support schools seeking to improve education by changing classroom practices. The groundwork for the current study is laid.

The study adopted a unique approach, which is described in detail in Volume I. First, it combined individuals and organizations with expertise in both examining and conducting dissemination and school improvement efforts. Second, the "zoom lens" design included profiling 45 federal dissemination programs; in-depth examination of 15 of these programs, and of dissemination activities in 10 selected states; a survey of implementation and external assistance in 146 school districts supported by 4 of these programs, and a year-long field study of implementation in 12 school districts.

Another aspect of the study approach was the use of "state-of-the-art" data collection and analysis methodologies. These included the development of Practice Profiles for each of the 61 practices studied; assessment of Levels of Use for each of the 315 teachers in the sample; content analysis of all interviews; and the use of causal models to determine factors influencing the various outcomes of school improvement. In

addition, unique quantitative approaches to analyzing field study data were developed for use in the study, and their documentation for use elsewhere was an unintended outcome.

In order to understand the effects of federal dissemination activities on classroom practice, it was necessary to sample carefully among US schools. First, four federal school improvement strategies, ranging widely in their underlying assumptions and operational characteristics, were selected. A single federal program exemplifying each strategy was then chosen. The strategies and programs (in parentheses) were:

- Interpersonal Linkage of Validated Practice (National Diffusion Network, including developers funded through ESEA Title I);
- Commercial Distribution (Bureau of Education for the Handicapped Market Linkage Program);
- State Administration of Dissemination (ESEA Title IV-C Adoption Grants);
- Local Development and Invention (ESEA Title IV-C Development Grants).

Selection of a sample of schools began with lists of "adopters," "purchasers," and "grantees" for the four programs within the ten sample states. A stratified, iterative procedure resulted in 146 school districts, varying in their length of experience with 61 innovative practices. The practices differed across many characteristics, including content area, level of schooling, pedagogical approach, and complexity. Within each district, a typical school was selected, and teachers, building administrators, and district administrators and coordinators were involved in data collection. In addition, we identified individuals and agencies external to the districts that had assisted in adoption and implementation of the practices. Some of these, such as the State Facilitators and Developer/Demonstrators of the National Diffusion Network, received direct federal funding for dissemination activities; others, such as university consultants to Title IV-C development projects, did not. These "external facilitators" became part of our sample.

Data were collected at all levels of education, from federal program officers to teachers. Structured interviews and questionnaires, as well as intensive observations for the field study, yielded data for a wide range of analyses. Profiling, frequency distributions, correlational and multivariate analyses, causal modeling, and quantitative analysis of field study data were carried out. The results are analyses of federal programs, portraits of school districts and school people involved in improvement efforts, an in-depth understanding of the implementation and institutionalization processes, and the identification of factors which influence "success" (defined in several different ways).

Volume I concludes with a discussion of the pros and cons of several features of the study's approach and design. These features include the evolving conceptual framework and study design; multiple instruments and data collection procedures; the sampling design and our final sample; characteristics and logistical demands of data collection; and data analysis pay-offs and shortcomings.

VOLUME I: SETTING THE STAGE FOR A STUDY OF SCHOOL IMPROVEMENT

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CHAPTER I: BACKGROUND

Section 1: Introduction

"May your children live in a time of change." So reads an ancient Chinese curse. Inattentive to the wisdom of eastern sages, the U.S. federal government has spent the past decade and a half fostering changes of every kind and magnitude within the educational community. Children have indeed experienced a time of change, as have parents, teachers, administrators, and all others concerned with learning and the schooling process. What have been the results of these changes? Have they in fact been a curse, or have the tables turned since early Chinese times and the changes in our schools instead been a blessing (if, at times, in disguise)?

In 1978, the US Office of Education (USOE) contracted with The NETWORK, Inc., in concert with a number of collaborating institutions, to explore the changes that had been wrought by federal strategies supporting school improvement. These were strategies relying on dissemination -- the deliberate attempt to effect school improvement by introducing new ideas, knowledge, techniques, products, processes. In exploring the Education Division of the Department of Health, Education and Welfare -- which during the course of the study became the Department of Education -- the study discovered over 45 federal programs that had dissemination components (Hellmer, Harris & Thompson, 1981). This certainly indicates remarkable and significant commitment to this form of support for school improvement.

Dissemination strategies varied widely among these programs, and it was USOE's intent and the study's mission to determine what those differences were, and what impact they had on the efforts made in schools and classrooms to change their practices. More specifically, the objectives of the study were to:

- examine assumptions underlying current and alternative dissemination strategies;
- explore and describe the structure and operations of major USOE dissemination activities;
- explore and describe the structure and operations of state dissemination activities, and to examine the relationships between federal and state dissemination efforts;
- determine the extent to which and the ways in which new practices disseminated with the support of these programs are actually carried out in local schools, and to determine the conditions that contribute to or are obstacles to their effective implementation; and

- recommend ways in which dissemination activities should be carried out in the future¹.

These objectives were achieved by profiling all federal education programs with dissemination components, which totaled 45; then selecting 15 among these to study in detail, explicating their assumptions and operating procedures. We finally focused on four quite different strategies for supporting school improvement, strategies whose purpose was to encourage schools to try out new practices and materials that would reach the classroom level. We selected an "exemplar" program from each strategy for in-depth study, tracing each from the federal level to the classroom, including the intermediate agencies or individuals whose responsibility it was to link external resources to the schools.

The study itself utilized a unique approach to school improvement research. It combined the talents of individuals and organizations across the nation whose unique perspectives and expertise allowed us to look at the phenomena under study through many lenses and with methodologies that were "state of the art." We were able to combine qualitative and quantitative methodologies, individual and organizational perspectives on the change process, and research and service orientations to school improvement. We expand upon this unique approach later in this Volume (see Chapter II, Section 2: The Study's Unique Approach).

In order to report study findings, we created eight volumes, each portraying a major aspect of the study, a ninth volume with summary and implications, and a tenth volume as an executive summary. This first volume provides background, describing how the study and the strategies we explored emerged from a long line of inquiry into the process of school improvement. The design, methodologies, sampling, and analyses used for the study are included as well. A description of the nine other volumes can be found in the front of this volume.

In the next section we begin to explore where our study fits into the scheme of federal dissemination policy related to school improvement, by briefly describing the evolution of that policy. Following that, we survey studies of school improvement, from whose findings emerged the need for both intensive and extensive examination required by our study objectives.

¹An additional, largely service-oriented, objective was the development of a formative evaluation system for the National Diffusion Network (Bank & Snidman, 1981). This and the other objectives are described in greater detail in Chapter II of this volume.

Section 2: Evolution of the Federal Role in Dissemination for School Improvement

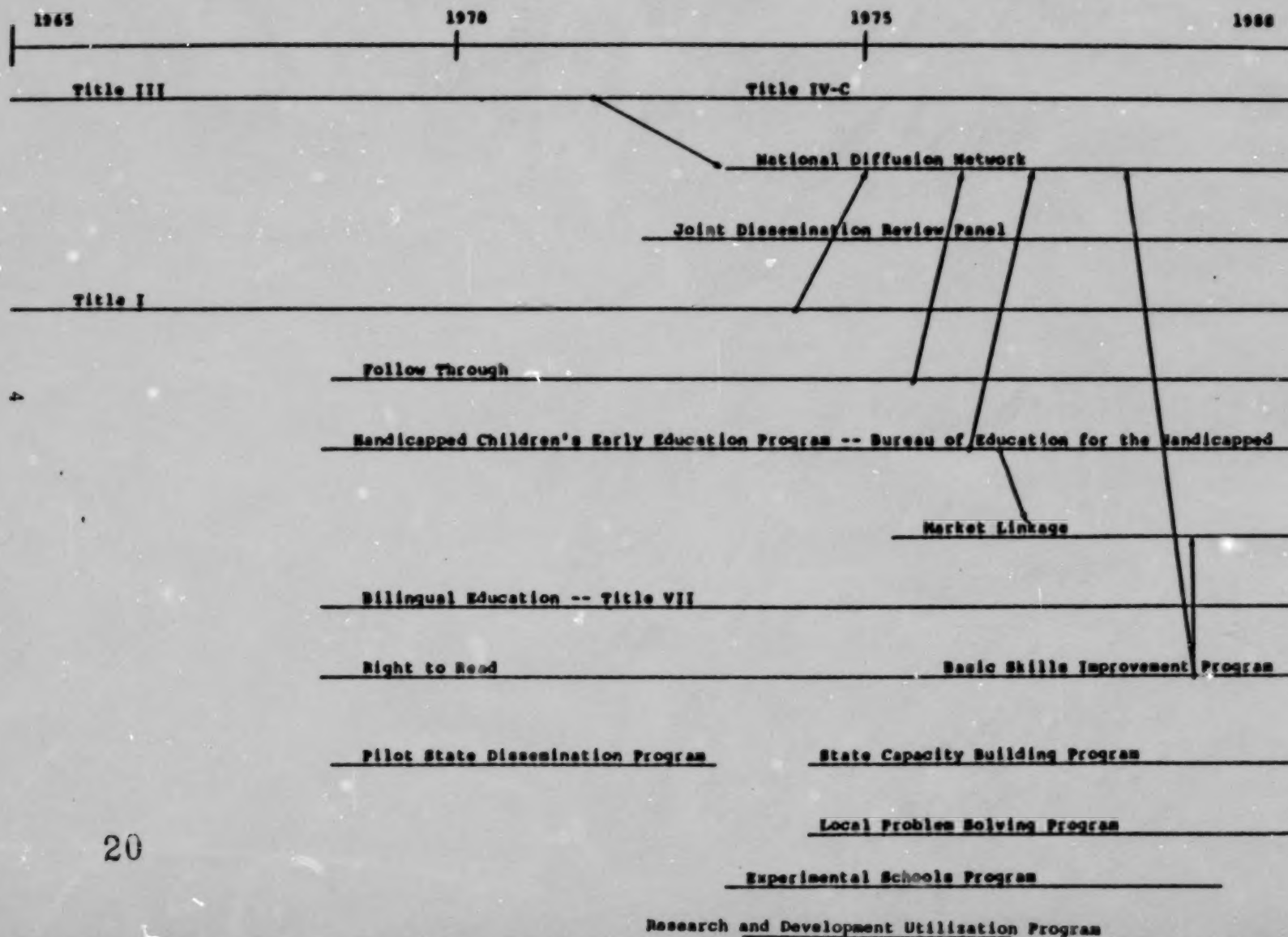
Over the past 15 years, the federal government has spent millions of dollars and been involved in a major way in supporting and encouraging educational improvement in the nation's schools. Federal strategies have evolved generally from demonstration, stimulating local schools to develop a wide range of innovative programs, to evaluation of the effect of these efforts, and finally to dissemination of those that had met with success².

In this section we trace this evolution, using as illustrations several of the 45 federal programs that were active in the area of dissemination.³ Figure 1 illustrates chronologically the birthdates and lifetimes of the major programs, beginning in 1965 with the funding of the Elementary and Secondary Education Act, Titles I and III, most specifically. Later in the 1960s, demonstration programs were initiated that focused on serving more narrowly defined populations, such as bilingual and handicapped, and selected content areas, such as reading. As the mid 1970s approached, there was a shift to identifying practices that worked and making those available nationwide. Dissemination of quality practices came of age -- both those practices emerging from earlier demonstration efforts, and those developed in federally funded R&D organizations. The latter became the concern of the National Institute of Education, whose dissemination programs focused most heavily on the transfer of research into practice.

²See Shive and Eiseman (1982) for a more detailed discussion of this evolution.

³See Hellmer, Harris and Thompson (1981) for profiles of all 45 programs. In this section we use as examples those programs that most emphatically focused on school improvement, using dissemination as a vehicle. Thus, programs such as ERIC that are focused more on information organization and retrieval rather than changing classroom practice, are not included in this discussion.

FIGURE 1: The Evolution of the Federal Role in Dissemination for School Improvement



The Beginning of Demonstration Programs

The federal presence in school improvement was initiated in the prolific social legislation of the Great Society. The 1960s was a decade of economic boom and escalating social tensions. Many people in and outside Washington believed that the federal government should play a direct role in stimulating social and economic development on behalf of the lower classes of society. This would reduce social tensions and spur economic activity for all. Education was to play a special part in this mission.

The Elementary and Secondary Education Act (ESEA) of 1965 was the beginning of a 15-year period of unprecedented federal activism in education. The act emerged out of the uncertainties of educators and politicians alike about just what kinds of "interventions" in local schools actually would improve education, and about what kind of political support existed for a direct federal role in education, traditionally the domain of state and local governments. Title III of ESEA was written to create a small demonstration program to fund a few local schools to develop innovative approaches to education. The basic idea was that if such direct funding could demonstrate new and effective programs, then perhaps the way would open for larger federal efforts in the future. (We should note here that Title I, a massively funded component of ESEA aimed at serving "disadvantaged" students, did not adopt a demonstration strategy until later. Rather, it provided money directly to school districts to do what they saw fit to improve education for these students. This did not necessarily mean that a new program would be developed.)

In the later years of the Johnson administration, several demonstration programs in addition to Title III were funded, largely targeted at "special" and "underserved" populations. These included Follow Through, Right-to-Read, Bilingual Education, and the Handicapped Children's Early Education Program. The federal government's basic strategy in funding such demonstration programs was to give seed money to the school districts that had written the most promising proposals for developing new ways of educating youngsters. Although there was a broad consensus that something ought to be done, and that the federal government should take the lead by stimulating local initiative, little was known about what made schooling successful, both in general and for populations with special needs.

The government's first grantees were pioneers in a virgin land. Imbued with a strong sense of mission, they pushed against the frontiers of conventional practice. The program administrators assumed that the first seed money grants would discover new and effective ways of teaching, and that other schools would benefit as they mounted similar programs of their own. Great faith was placed in the inventive capacity of local schools to address the problems of schools in general. The federal role was to supply the "venture capital" for promising new ideas.

The federal budget for such school improvement programs grew rapidly. An increasing number of first year projects were funded, while other projects were continued in their second, third, and fourth years. The theory was that funded districts would serve as demonstration sites where other schools wishing to use an effective practice could observe the approach in operation and then return and implement it in their own settings. Thus widespread school improvement would result from the provision of seed money to just a few districts.

Evaluation of Early Efforts

With the maturing of demonstration programs and concurrent arrival of a Republican administration under President Nixon, the federal role in school improvement came under inspection. An era of evaluation began, and it lasted approximately from 1970 to 1975. Were the programs working? Were they worth it? Research and evaluation findings cast doubts upon the programs' actual contributions to student achievement (Glass, 1970; Wargo et al., 1972; Westinghouse Learning Corporation, 1969). Further, schools receiving demonstration grants did not appear to focus sufficient energy on making others aware of their innovative programs and helping those interested to use them. Most demonstration sites assumed that their programs would diffuse themselves and would be learned about almost by "osmosis." Those that did launch a significant dissemination effort were discouraged by the "seed money" notion of funding for only three years, since just as they were ready to share their new practices, federal funds ceased, and what resources remained had to be directed at internal operations.

A further development involved quality control. If, in fact, demonstration programs were to be encouraged to disseminate themselves, how was the federal government to be sure that what the school districts had created were in fact effective practices? Wasn't the government, by virtue of funding dissemination, in essence giving these programs a stamp of approval? Didn't the federal government have some sort of "consumer protection" obligation?

One response to these concerns was the establishment of the Joint Dissemination Review Panel (JDRP) in 1972⁴. Originally consisting of staff half from the Office of Education and half from the National Institute of Education, the JDRP was created to review evidence of effectiveness of educational practices and to validate their effects. The establishment of this review process was a first step in rethinking the federal role in school improvement. With the ability to certify exemplary practices, the next step was to develop or expand mechanisms for getting them disseminated.

⁴For other reactions to this concern, and more information about the JDRP, see Shive and Eiseman (1982).

Dissemination Comes of Age

Most of the early demonstration programs had dissemination components built in, at least in theory. The arguments for federal programs to expand these components were many; they included the limited effectiveness of pure demonstration and the creation of the JDRP to help programs validate practices they identified as potentially exemplary.

Further, since adopting and implementing new practices was considerably less expensive to schools than developing their own, federal program funds could go further. Dissemination was seen as a cost-effective strategy for school improvement. (And, not inconsequentially, of increasing the number of local school districts who could be cited as "benefiting" from federal programs.)

Several "experiments" in dissemination were soon devised. One involved the packaging of effective practices. As noted earlier, since its inception, ESEA Title I had been primarily responsible for the education of poverty level youngsters, and had done so through direct allotment of funding to local and state agencies. By the early 1970s, federal program officers realized that providing money and descriptive information on effective practices was not, in and of itself, proving effective in raising the overall achievement level of students in Title I programs. They assumed that schools were not using the results of research and development, demonstrated by these practices, because they were not available in a form usable by practitioners. In 1973 USOE funded the development of six Project Information Packages (PIPs), each of which contained comprehensive materials and instructions about a specific JDRP-approved practice. Using the PIPs, the federal sponsors reasoned that schools could choose the exemplary new practice that best met their particular needs and, simply by following the detailed steps and procedures in the PIP, implement the new practice without extensive in-person assistance.

The second notable dissemination "experiment" involved not packaging, but personal linkages of effective practice with schools. In 1974 the National Diffusion Network (NDN) was created under Title III to bring about widespread implementation of JDRP-approved practices. The NDN funded developers of these practices as Developer/Demonstrators (D/Ds) -- most often practicing teachers themselves -- and dissemination agents within each state as State Facilitators (SFs). The strategy was for SFs to help school people define their improvement needs, make them aware of D/D projects that could meet those needs, and arrange for D/D training and implementation assistance in the practice of their choice.

As will be noted later when we discuss the results of studies of school improvement efforts, the packaging experiment showed limited pay-off. The NDN, however, appeared to be a more useful vehicle for dissemination, and several other federal programs took advantage of it. As indicated by the arrows in Figure 1, projects funded by ESEA Title I, Follow Through, the Handicapped Childrens'

Early Education Program, Right-to-Read (later the Basic Skills Improvement Program), and ESEA Title III (later Title IV-C), made use of the JDRP to receive exemplary status and become part of the NDN's widespread dissemination system. Although in some cases the NDN did not provide direct funding for the developers of the practices, as in the Follow Through Resource Centers, the exemplary projects nevertheless became part of the State Facilitators' catalogue of offerings, and the NDN provided a vehicle for schools to become aware of them.

Another dissemination experiment that emerged in the late 1970s was a venture into the private sector. The Bureau for the Educationally Handicapped, and later the Basic Skills Improvement Program (formerly Right to Read), provided direct technical assistance to help grantees design their materials so that private publishers would be more likely to produce and distribute them. A "market linkage" strategy made publishers aware of these products once they were developed, and assisted in the licensing procedures.

Dissemination in the National Institute of Education

While school improvement was of prime concern to the Office of Education from the mid-1960s, another agency in the Education Division was carrying on a related set of activities.

In the early 1970s, demonstration programs in the Office of Education were undergoing evaluation and program staff were formulating validation and dissemination strategies. There were some in the Education Division who were skeptical about whether the ideas behind these programs were in fact remedying the nation's educational ills. In 1972, the National Institute of Education (NIE) was created to find new ways of addressing major educational problems. One of NIE's key missions was getting research into practice, i.e., dissemination for school improvement.⁵

NIE's dissemination initiatives ranged widely, based on different conceptions of the problems confronting schools seeking to improve their impact on students. Four programs, included in Figure 1, illustrate the widely different approaches. The first, the State Capacity Building Program (preceded by but similar to the Pilot State Dissemination Program) funded state education agencies to (1) develop a system to extend information resources to local educators through in-person assistance (i.e., linking agents) and (2) coordinate diverse dissemination activities at the state level. The program was based on an assumption that state agencies may be closer to local schools, and so better able to deliver new information, ideas, and programs than federal agencies. The program also responded to the problem of multiple sources of funding from federal offices being funneled through state agencies, since it emphasized coordination and integration of these various dissemination thrusts.

⁵See Thompson (1982) for a detailed description of the evolution of dissemination programs within the NIE.

A very different approach taken to school improvement by NIE was in the Local Problem Solving program. Here, the underlying assumption was that school improvement occurs only when school and teachers have a capacity for self-examination and self-improvement. Activities within this program were initiated to develop problem-solving capabilities in individual teachers (e.g., the Teacher Center Exchange), as well as in schools (e.g., the Urban Sites/Documentation and Technical Assistance Project).

The Research and Development Exchange was designed to work through regional educational laboratories to make practitioners (from state agencies to local districts) aware of the products of research and development. In addition to creating greater awareness, they make those R&D products more accessible by putting them in readily usable forms, such as synthesis documents, newsletters, and workshops.

Another dissemination approach taken by NIE combined the three concepts of personal linkage, problem-solving for capacity building, and the use of products resulting from research and development. The Research and Development Utilization Program provided schools with in-person assistance in problem-solving to identify areas needing improvement, followed by linkage to appropriate R&D resources, and assistance in implementing the selected practice.

The NIE approaches to dissemination differed generally from those of the Office of Education in that NIE relied more on the products of research and development (many of which the agency itself had funded), rather than supporting schools to develop practices which could then be implemented by other schools. Both agencies experimented with different vehicles for dissemination, from print to consultation, to conference/workshop settings, to "trickle-down" (e.g., state agencies as direct client, assuming eventual influence on schools). Both agencies, too, felt the effect of reductions in federal spending, as the heyday of dissemination experimentation met the grim realities of the 1980s.

School Improvement Enters the Era of Limits

During the Carter years, the inflation rate and proposed budget cuts began to foreshadow the decline in usable federal monies for school improvements. The Reagan administration ushered in a new stage for federal school improvement programs, one which brought massive budget cuts and, in some cases, consolidation into block grants to the states. Dissemination, which was a moderate reform launched from within the federal bureaucracy, may have seen its day. The arguments supporting dissemination over other strategic alternatives are being swept away by a more fundamental -- indeed radical -- reassessment of the whole intergovernmental system. The formulation of the new federal role in school improvement has begun; its outcome is not yet clear.

Section 3: Research on School Improvement: Studies of Federally-Funded Dissemination Efforts

As described in the previous section, federal support for school improvement evolved from the funding of a wide variety of demonstration programs to supporting an equally diverse array of strategies to disseminate programs that already existed. While the government was busy funding schools to improve, they were also interested in what made improvement happen: in essence, what were the effects of the federal efforts? So for over ten years, the government has sponsored research studies that have carefully examined many of the programs supporting school improvement. In this section we survey the results of these studies, providing a backdrop for the major questions asked by our current study.

We look at two sets of prior research studies. The primary set consists of those funded by the federal government to examine the effects of selected federal programs, and in doing so, to garner learnings about how dissemination takes place and school improvement occurs. This set includes:

- The Rand Corporation's study of ESEA Title III, Bilingual Education, Right-to-Read, and Vocational Education,
- Stanford Research Institute's study of the Project Information Packages (PIPs),
- Stanford Research Institute's study of the National Diffusion Network,
- Columbia University's study of the Pilot State Dissemination Project,
- NTS Research Corporation's study of the State Capacity Building Program,
- Abt Associates' study of the Research and Development Utilization Program, and
- Abt Associates' study of the Rural Experimental Schools Program.

Another set of research studies and syntheses did not focus on federally-funded programs, but rather examined the processes of dissemination and school improvement and significantly added to understandings in these areas. This set of studies includes:

- The University of Texas Research and Development Center for Teacher Education's work on the Concerns-Based Adoption Model,

- The work of Ronald Havelock at the University of Michigan's Institute for Social Research, focused on the process of knowledge utilization,
- The work of John Goodlad in the Kettering Foundation's Study of Educational Change and School Improvement, and
- Accumulated work on the diffusion of innovations, synthesized by Rogers and Shoemaker in 1971.

This section summarizes significant findings from both sets of studies, in light of the primary question facing the present study: What accounts for the success or failure of efforts to improve schools by implementing new practices? Collectively, the studies describe the influences of variables in several domains, which we use to organize our brief review. Those domains are:

- policies
- practices
- people (teachers, building administrators, district assisters, external facilitators⁶)
- context
- implementation process.

Because past studies helped illuminate the impact of factors in these domains on school improvement, they also formed the basis for the hypotheses and objectives of our study. Thus, in later sections, they provide an organizing framework for discussing our hypotheses, objectives, and finally our own findings, particularly as they support, contradict, or add to what is already known.

We next describe each study briefly: its focus, methodology, timeline. Then we discuss each domain influencing school improvement, drawing on findings from the studies where they exist. Also for each domain we identify what issues were either raised or left unresolved by the previous research, and how our study sought to address them.

Research Focused on Federal Programs

We have limited this review to those studies of federal programs that extended our understandings about school improvement. This eliminates those summative evaluations which focused more narrowly on the impact of specific programs on their target populations.

⁶Throughout the volumes reporting findings from our study, we call individuals who provide assistance from outside the school district, "external facilitators." In other studies, these individuals are variously labeled "linking agents," "linkers," "external agents," and "field agents."

To give a sense of the timing of these studies, Figure 2 overlays the evolution of federal programs described in the last section with the key studies of these programs.

The Rand Corporation Study

In 1978, the Rand Corporation completed what was clearly the largest study up to that point of federal demonstration programs. In the study's first phase (1973-75), four programs were examined: ESEA Title III, Innovative Projects; ESEA Title VII, Bilingual Education; Vocational Education, 1968 Amendments, Part D; and Right-to-Read (Berman & McLaughlin, 1975). The later phase (1975-77) included only the first two programs (Berman & McLaughlin, 1978). All programs studied aimed at promoting educational change in schools by paying for the costs of innovative projects for a trial period.

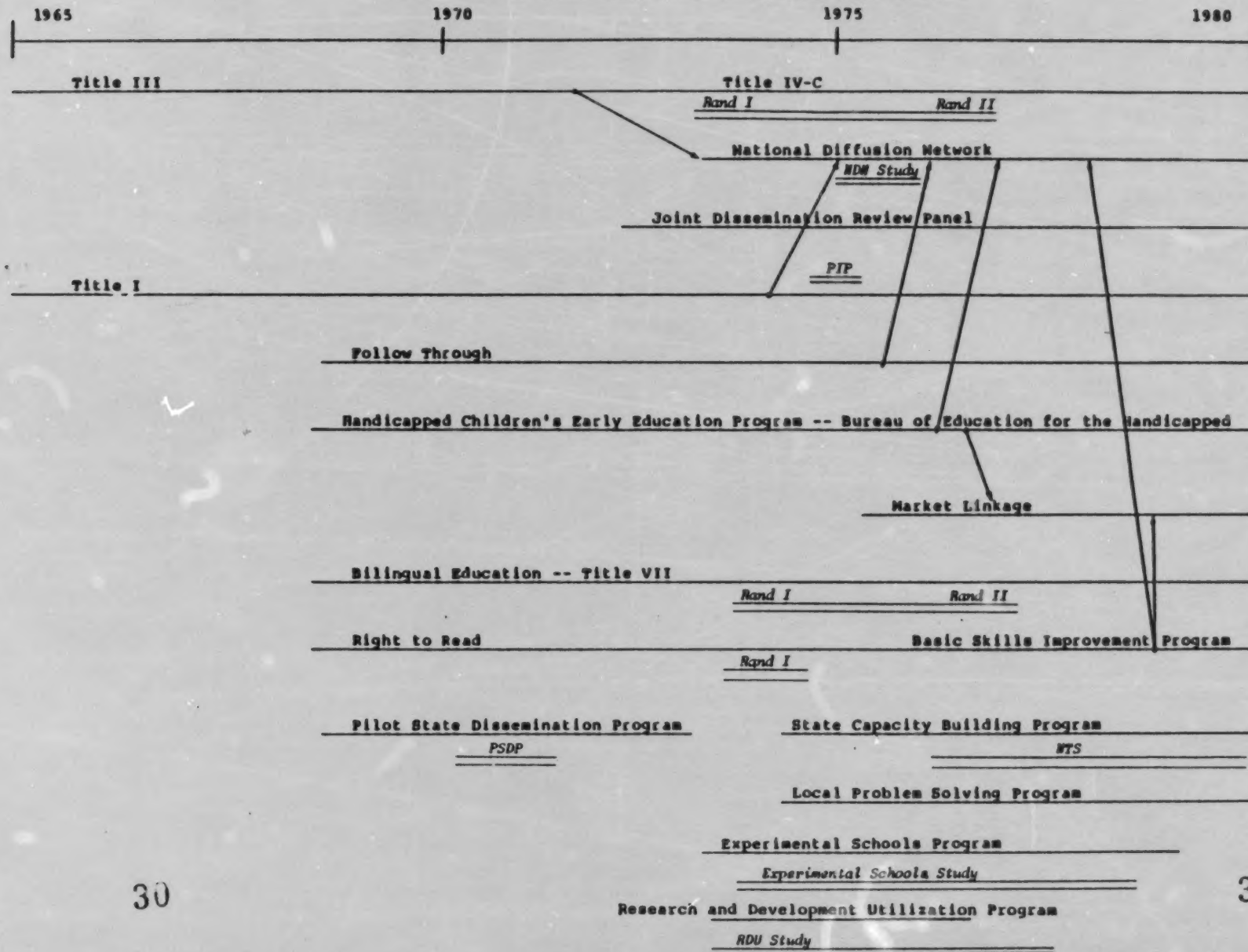
Phase I of the study examined local projects during their last or next to last year of federal support, focusing on initiation and implementation issues. Data collection included personal survey interviews with teachers, principals, and administrators at 293 sites, and interview/observation studies of 29 sites drawn from the larger sample. Phase II, which focused on the fate of the projects following withdrawal of federal funds, involved return visits to 100 of the Title III and Title VII projects.

Study of Project Information Packages

In 1974, USOE funded 19 school districts to participate in a field test of 6 Project Information Packages (PIPs) (Stearns & Norwood, 1977). The packages were designed to provide district personnel with sufficient information to implement approaches to compensatory education in reading and mathematics. These approaches had been developed by other school districts and had been validated by the Joint Dissemination Review Panel. The field test focused on the willingness and ability of school district staff to implement the packaged guidelines, and the effects of the implementation efforts on students. It asked, simply, can innovations be implemented and have positive impact by using highly detailed, carefully packaged materials but without external, interpersonal assistance?

The first year of the Stanford Research Institute's study of the field test focused on the extent to which school district personnel were willing and able to implement the packaged guidelines. The second year focused on determining effects on students. During both years repeated visits were made to the 19 test sites to interview school and district personnel and observe project operations. Questionnaires on the project assessed attitudes, opinions, and impressions of project staff and a sample of school and district personnel. Student outcomes were measured by standardized achievement tests and affective measures.

FIGURE 2: Studies of Federal Programs for School Improvement,
Relative to the Evolution of those Programs



Study of the National Diffusion Network

In 1975, the Stanford Research Institute began a two-year study of the National Diffusion Network (Emrick, Peterson & Agarwala-Rogers, 1977). Its goals were to understand the operations of the players within the NDN, and the impact of these on adoptions of the NDN practices. Baseline data were collected through a questionnaire survey of 1974-75 NDN participants (including a sample of 1,000 adopting school districts) in the fall of 1975; a more comprehensive survey was conducted with both new and continuing participants (150 State Facilitators and Developer/Demonstrators and 1,500 adopters) in the spring of 1976. Site visits, interviews, observations, document reviews, and extensive LEA staff surveys were conducted with a smaller sample.

Study of the Pilot State Dissemination Project

The Pilot State Dissemination Project, initiated in 1970, provided three state agencies support for two years to develop and test strategies for closing the gap between research and practice. The strategies included use of field agents supported by information and personal resources. Concurrent with the operation of the project, the Bureau of Applied Research (Columbia University) conducted a comprehensive evaluation, addressing both formative and summative goals (Sieber, Louis & Metzger, 1972).

Field observers were assigned to each project to develop case studies of the activities of the agents and retrieval personnel. Structured instruments used to gather quantitative data included a goal checklist administered to all project staff, questionnaires mailed to clients, and information retrieval forms.

Study of the State Capacity Building Grants Program

Between 1975 and 1980, NIE awarded capacity building grants to 41 states to support efforts of the state education agency to build a "comprehensive" and "generalized" state dissemination system. In 1976, NTS began a four-year study to determine (1) whether dissemination capacity was being built by the program, and if so, how, and (2) whether the program was having an effect, and if so, what was the nature of the effect (Royster, Madey, Decad & Baker, 1981).

Phase I of the study, the first 11 months, was devoted to program definition and clarification, and development of a study design; site visits also were made to each of 23 state projects. The second phase, the full-scale evaluation, involved collecting questionnaire and interview data from project directors, selected SEA administrators, and information resource base staff, in 30 states funded before 1978; questionnaire data were collected later from states funded in 1978 and 1979. Site visits were made to five additional states in 1980. NIE program officers and project monitors also were interviewed, and a variety of state and federal documents were reviewed.

Rural Experimental Schools Study

The Experimental Schools Program, begun in 1970 under USOE funding and later transferred to NIE, was aimed at correcting a federal presence in education that was seen as too directive, too piecemeal, and too focused on specific innovations. Its aim was to involve local school districts and the federal government as collaborators in a series of field experiments that would carry out comprehensive planning for local educational improvement in both urban and rural settings.

In 1972 Abt Associates launched a large-scale, extended study of the ten rural districts/schools in the program. Their inquiry included sub-studies of the histories of each district, ethnographic case studies of each project, the interaction of the project and its community context, the organization and implementation of each project, and the impact of the project on pupil cognitive and affective behavior. Later, studies of federal-level implementation, mini-case studies, and cross-site analysis, and a synthesis of the sub-studies' findings were added (Herriott & Gross, 1979; Herriott, 1980).

Actual work on the study lasted until 1980. The data collection methods deliberately ranged widely across sub-studies: they included long-term resident ethnography, pupil achievement tests and questionnaires, surveys by mail of school staff and community residents, formal and informal interviews, and census documents.

Study of the R&D Utilization Program

The Abt Associates' study of NIE's R&D Utilization Program focused on the experiences of seven funded service delivery projects, with the objective of illuminating some enduring problems in designing and sustaining effective change efforts in schools (Louis & Rosenblum, 1981; Louis, Rosenblum & Molitor, 1981). The research questions involved understanding the influences of the program's three primary components: in-person assistance, externally developed practices, and a problem-solving process activated at the school level to identify needs and find and implement programmatic solutions.

The methodology merged quantitative and qualitative approaches, integrating data collected at the individual sites early in the program, case studies written by the seven funded RDU projects themselves, and a wave of survey data (involving questionnaires sent to teachers and principals) collected in 1979. In addition, site visits were made by Abt staff to 51 of the more than 300 RDU schools, resulting in field notes and site reports; RDU field agents were surveyed; and various documents were reviewed. Quantitative and qualitative data were integrated using holistic cross-site coding schemes.

These seven research studies contribute in a major way to understanding the effects of specific federal strategies that promote school improvement. In the next section we briefly describe several additional studies or areas of work that illuminated the dissemination and implementation processes and contributed to conceptualization of the current study. Note that we are most interested in factors influencing how school improvement occurs, not what is being done in a classroom or school that makes a difference in student achievement or other outcomes. For this reason we are not including research on classroom or teacher effectiveness, nor are we reviewing the effective schools research.

Research Focused on School Improvement

Research on the Concerns-Based Adoption Model

Since 1973, an NIE-funded research effort at the Texas R&D Center for Teacher Education has focused on the process of school improvement as it affects the individuals involved. A model that captures the dynamics of innovation implementation, the Concerns-Based Adoption Model, features several research-validated dimensions: seven Stages of Concern, eight Levels of Use, different configurations in which an innovation is used, and the interventions that are made to support users during the change process (Hall & Loucks, 1977; Hall & Loucks, 1978; Loucks & Hall, 1979).

Studies focused on validating these aspects of the model, and on discovering important influences on school improvement, have used a variety of methodologies. These include instruments developed especially to assess user concerns, use, innovation configuration, and school context; ethnographic approaches to collect data about interventions; and a merging of quantitative and qualitative methodologies to develop case studies of personal and organizational dynamics during a school improvement effort.

Institute for Social Research's Work on Linkage

In the late 1960s and early 1970s, Havelock and his colleagues at the Institute for Social Research conceptualized the dynamics of innovation by reviewing and synthesizing the results of nearly 4,000 studies of knowledge utilization in 11 fields ranging from education, agriculture, and communication theory, to law and social welfare (Havelock & Havelock, 1973). Linking agents were recognized as making a critical contribution to this process, by playing out a variety of roles or functions depending on the form of knowledge, their position in organizations, and the different kinds of change processes in which they were involved. This synthesis, and later work on innovation processes and the training of change agents (Havelock, 1973) centered around the idea of a "linkage model" involving the interactive connection of "users" with "resource systems." This conceptual schema has assisted in

the identification of specific contributions of linking agents in different kinds of programs (e.g., the National Diffusion Network), and has guided agencies and organizations to more precisely formulate the functions of individuals who link them with new knowledge.

Kettering Foundation's Study of Educational Change and School Improvement

In 1965, /I/D/E/A/, the educational affiliate of the Kettering Foundation, funded John Goodlad to design and study a new strategy for educational improvement (Bentzen, 1974). In this study, 18 schools from 18 southern California districts were designated as the "League of Cooperating Schools." The strategy that evolved was an internal process based on four activities in which school staff participated: dialogue, decision-making, action, and evaluation (DDAE). Schools engaged in these activities, coupled with a structure to support and sustain them, formed the focus of a five-year development and simultaneous research effort.

Here again, qualitative and quantitative methodologies were used to provide an understanding of the dynamics of school improvement. "Research assistants" visited their assigned schools regularly (two schools per assistant visited twice a month on the average). The research assistants had the double responsibility of offering help and support with the internal improvement process at the same time they documented all the actions and events that occurred. The resulting field notes were used in combination with data from teacher and principal questionnaires covering areas such as decision-making, personality dynamics, teacher/principal power, and organizational climate.

Research on Innovations

Research on the diffusion of new practices has occurred in diverse fields, from agriculture to medicine to industry to education. Its primary goal is to understand how innovations spread from their source to potential receivers, and to understand the factors affecting the adoption of such innovations. In 1962, and again in 1971 (with Shoemaker), Everett Rogers undertook to synthesize the research in this area. Drawn from diverse research traditions and across many cultures, the results are plausibly convergent as they relate to the influence of different innovation attributes (e.g., compatibility, complexity), to the innovation-decision process, and to the categories of adopters. This collection of research injects understandings about improvement that are generalizable well beyond education, as it draws upon an even broader array of research methodologies and respondents.

The 11 studies, sets of studies, and lines of research described above offer an array of insights into the process of school improvement and the effectiveness of federal strategies in supporting the process. In the next section, we synthesize the primary learnings, emphasizing those that contributed to

conceptualization of the present study. We do not attempt a close-grained analysis, but rather a general view of the main lines of inquiry and the gaps we sought to fill.

Influences on School Improvement: Findings From Research

In Figure 3 we summarize findings from the eleven selected studies that shed light on factors from the different domains affecting school improvement. Note that discussion of each domain could easily fill as many pages as this volume. We have tried to extract key findings as a framework for the objectives of the current study and for our later report of our own findings in Volumes II and III.

Policies

What is a "policy" in the context of school improvement programs? The term is used in a variety of vague meanings ranging from "a value-based message" to "general intentions" to "assumptions underlying strategies" to "desirable program procedures." We concur with Zigler and Kagan (1982) that policy stands in an intermediate position between general principles on the one hand, and practice on the other. A policy is a set of guidelines and intentions that help to operationalize a principle. A typical school improvement policy might be, for example, "Provide seed money for demonstrations." Such a policy rests on several principles (that innovations need to be and can be locally developed; that people are more likely to adopt innovations they have seen in practice, etc.) and leads to specific program practices (such as those in the ESEA Title IV-C programs studied by Rand).

By the time the Rand studies were complete in 1978, federal school improvement policy was much maligned as "throwing money down the drain." Not only had previous large-scale evaluations cast doubt upon the impact of government funding strategies on students, but Rand researchers concluded that, typically, little remained of demonstration programs after the federal monies ceased. Where the demonstration programs did remain, a significant amount of adaptation was typical, often so much that the program no longer resembled the original conception. Further, this thoroughly bent version all too often resembled what the school or districts had been doing before. Certainly a far cry from substantial change!

Note, however, that the federal policies that Rand studied were seed money programs, resting firmly on the notion of local development of a new practice to meet a particular need. Other studies, focused on strategies that involved externally developed innovations, reported different findings. The study of Project Information Packages (PIPs) revealed that self-contained packages designed for use without external assistance could help districts master the management aspects of installation, but rarely had a

FIGURE 3: Influences on School Improvement: Findings From Research

POLICIES	PRACTICES	PEOPLE				CONTENT	IMPLEMENTATION PROCESS
		Teachers	Building Administrators	Local District Facilitators	External Facilitators		
1. Federal school improvement policies have been unsuccessful in getting changes to remain after funding ceases (1). 2. Policies combining in-person assistance with validated practices are most likely to result in change (2). 3. Policies providing for no in-person assistance are least likely to result in change (3).	1. Certain attributes of practices contribute to their adoption/use, including relative advantage, compatibility, complexity, trialability, observability (7), comprehensiveness, quality of materials, externally-determined validity, availability, transportability (4), value congruence (1). 2. Adaptation of a new practice is necessary for successful implementation (1). 3. Practices developed externally can be implemented successfully, and with a high degree of fidelity (2, 4). 4. Practices, even the ones that are not complicated, can rarely be implemented without in-person assistance (2, 3). 5. When the improvement effort is large in scope (e.g., practice is a significant change for the users), there is more possibility for lasting changes to occur (1).	1. Teachers are key actors in school improvement and should be the primary targets of interventions (5). 2. Schools are the most important unit in school improvement efforts and should be the primary targets for interventions (6). 3. Both teachers and schools are critical to success of change efforts, and deserve attention (4). 4. Teacher commitment is critical to implementation success (1). 5. A critical mass of teachers is important (1, 6). 6. Active involvement of teachers is required, especially in planning (1, 4) and decision-making (1, 2, 4). 7. Teacher construction of materials contributes to implementation success (1).	1. Direct principal assistance in implementation is necessary for success (1, 4, 6). 2. Direct principal assistance in implementation is not necessary for success (2).	1. Support and awareness important (1, 6).	1. In-person assistance is needed with externally-developed practices (2, 3, 4). 2. External assistance is not needed (1, 6).	1. A climate that is open, trusting, supportive, communicative, and where change is rewarded is conducive to school improvement (1, 6).	1. There are several phases to the change process, experienced by individuals and schools; interventions should be keyed to those phases (1, 2, 5, 6). 2. Implementation takes several years (2-5) (5). 3. Schools need to incorporate a structured problem-solving process for implementation to be successful (1, 4, 6). 4. Assistance and support is as important to success after use begins (back-end) as it is before use (front-end) (1, 2, 4).

Key to Studies:

- | | |
|---------|-----------------------|
| 1. Rand | 5. Texas |
| 2. NDN | 6. /I/D/E/A/ |
| 3. PIP | 7. Rogers & Shoemaker |
| 4. RDU | |

lasting, if any, influence on instruction at the classroom level. Even more interestingly, it appeared that PIPs that made it to reasonably careful and sustained implementation in fact had done so through the presence of spontaneously-provided in-person assistance. On the other hand, the Emrick et al. study of the National Diffusion Network found a remarkable number of successful adoptions of NDN programs, and the promise of incorporation for a significant number of these. Abt's examination of outcomes of the R&D Utilization Program concluded that a policy that combines the external assistance and validated practices of strategies such as the NDN, with a school level problem-solving process, successfully promotes school improvement.

This collection of studies provides some insights into the influence of certain policy configurations, while leaving many questions unanswered. Local development programs, especially ones that were undertaken early in the evolution of federal policy, appear to have had limited success in overcoming both the status quo of conventional school practice, and the complexities of conceptualizing, launching, and maintaining a significant change effort at the local level. On the other hand, policies which involve clearly defined and validated practices, when linked with in-person assistance from experienced developers, implementers, and facilitators, appear to have a greater chance for improving school practice. But there was something ironic here. The majority of the validated practices that figured in these successes were in fact locally developed! Most came from local school districts, not from universities or labs and centers. So even though local development might be a rocky process, those practices that made it through validation, and were supported by in-person technical assistance, were being effective. The unanswered question here is whether the positive effects found in studies of the implementation of validated practices derived from the quality of locally-developed innovations, the assistance provided, or both.

Other questions also remain about the influence of policy on school improvement. The chain between policy and classroom practice has many links. Implementation of policy at every link in the chain -- including, state, linking agency, district, school -- is often inadequate. What are these links; how do they play out their parts in implementation; and how do they contribute to the goal of change in classroom practice? It is fair to say that none of these studies examined carefully the implementation of practices at the classroom level, where both the fullest distortion of policy intentions and their greatest influence on learning outcomes are apt to occur. Thus, even after nearly a decade of school improvement research, at the time the government determined to fund our study, more light still needed to be shed on the influences of policy on school improvement, and we aimed part of the study in that direction.

Practices

We use the term "practice" synonymously with the term "innovation." Volumes have been written on whether an innovation must be new to the adopting system, new in general practice, or new to the world. In the study we did not wish to prejudge the issue, and considered only that most federally-supported school improvement efforts involve the development and/or adoption of some practice or program that represents some shift from what the local school was doing before. Hence the applicability of the vaguely-defined term "innovation."

The innovation itself has received a great deal of attention in the selected studies. The research synthesized by Rogers and Shoemaker identifies several attributes of innovations that contribute to their successful adoption. These include their relative advantage, compatability (with values, needs), complexity, trialability, and observability (of results). The more an innovation has of each of these attributes, the more readily it is adopted; except for complexity, which works against successful adoption. Note here that Rogers and Shoemaker are talking about adoption, i.e., the decision to use an innovation. These innovation attributes, then, influence the decision, but the authors do not relate them to actual implementation. Other studies, which did focus on implementation, add other success-enhancing attributes to the list: value congruence (Rand); comprehensiveness, quality of materials, externally-developed validity, availability, and transportability (RDU Study).

The Rand studies made significant strides in helping to understand the interface between the adopting organization and the innovation. They coined the term "mutual adaptation" for the process of the organization adjusting the innovation to fit the unique situation, and the innovation influencing the organization to adopt new strategies, behaviors, etc. This dynamic process was viewed as a positive influence on school improvement. When the innovation did not change its shape to fit the situation, or the organization did not change to adopt some or all of the requirements of the innovation, implementation rarely occurred. We should note in passing, as has Mann (1978), that implementation is essentially a user-dominant process; it is typical for the innovation to change more than the local organization, even when adaptation is supposedly "mutual."

One inference often made from this finding is that fidelity to an innovation's key characteristics is not only an undesirable outcome -- it is also impossible. Majone and Wildavsky (1978) add another dimension: unpredictability.

Faithful implementation is sometimes undesirable (because the idea is bad), sometimes impossible (because power won't permit), and often unforeseeable (because it depends on what people bring to it as well as what's in it) (p. 25).

However, the Emrick et al. NDN study found fidelity reported in successful implementations of NDN programs. Here again, the difference may be in the definition and characteristics of the "innovation" being studied. Those developed externally to the adopting school or district and disseminated by the NDN are clearly defined and have a proven "track record;" they are also usually "smaller," more focused. Often, locally developed and non-validated programs lack these attributes. Thus what appear to be contradictory findings have probably resulted from studying different phenomena. Furthermore, Rand's "mutual adaptation" was a school or district level phenomenon. Classroom innovations, such as those in the NDN, are implemented by individuals. Findings about the propensity for organizations to adapt programs (and themselves) are conceptually different and so cannot automatically be compared to individual adaptations or lack thereof. Different dynamics clearly come into play.

Other Rand findings that involve the innovation itself relate to the size of the innovation and the motive of the adopting unit. The larger the scope (and personal "demandingness") of the new program -- the more people, organizational arrangements, new behaviors it required -- the greater chance for success. (Note that the exception was innovations so comprehensive that they required elementary-secondary coordination.) At first glance, this appears to be in conflict with Rogers and Shoemaker's conclusion that the more complex the innovation, the less likely it will be adopted. But, the innovations represented in Rogers and Shoemaker's synthesis are often used by one person (e.g., farmers using hybrid corn, doctors using a new drug), and the more complex the innovation, the more difficult one person may find it to master all the parts. Furthermore, as noted before, these studies relate to adoption -- i.e., the user's decision to use. Something that looks complicated may not be very attractive to the potential user. On the other hand, the Rand innovations often involved a set of people in organizations (i.e., users could take advantage of a division of labor) and were often being formulated and developed by this very set of people. They were rarely confronted with the whole innovation; had they been, perhaps the degree of complexity would have worked against them. Still, we should note that Rand was quite clear in noting that teacher effort, energy expended, tended to lead to more productive projects, a theme we felt deserved further exploration. In any case, it was clear to us as we embarked on the study that innovation size/complexity somehow interacted with characteristics of the adopting unit, with stage of the process (adoption, implementation), and with the innovation's source (local or external).

Finally, any discussion of practices should refer again to the need for in-person assistance when the innovation is externally developed. The limited success without such assistance, revealed in the PIP study, is supported by the finding that a proven practice delivered by a credible, skilled person is a winning combination (Emrick et al., 1977; Seiber et al., 1972; Louis et al., 1981).

The work on innovations and the findings about their adoption/implementation left many questions unanswered. First, none of the work cited above looked intensively at each new practice as it "hit the classroom." How do users actually incorporate new behaviors, materials, strategies into their ongoing teaching? How much adaptation actually takes place? What kinds? Why? Since findings appear to reflect successful school improvement resulting from use of clearly defined, validated practices, what should our expectations be for how those practices actually look in the classroom?

Another set of questions related to the actual practices themselves, and how their attributes (e.g., complexity, approach, implementation requirements) influenced the success of implementation. Downs and Mohr (1976) had noted that it is impossible to understand the phenomenon of school improvement by focusing on the innovation in isolation. Rather, it is necessary to examine the innovation in relation to a given site, i.e., the innovation-site pair. This forced us to ponder: Does the nature of the new practice significantly influence the success of implementation? What factors in a school or classroom influence how a given practice will be perceived and used (or not used)?

Finally, the Rand, NDN, and RDU studies looked at different federal strategies with different assumptions about school improvement. There could have been a nice opportunity for contrast. Unfortunately, they appear to have examined somewhat different phenomena, focusing their lenses at different levels, and so it was difficult to compare and contrast the federal strategies. How does the policy influence the eventual "look" of the innovation? Does it influence the range of uses, and scope of the effort as well as the characteristics of the innovation itself? These and other questions remained to be resolved in our study.

People: Teachers

People have a significant influence on school improvement, since they fill all the roles of users, assisters, supporters, and contributors to the context within which the process occurs. Studies have portrayed teachers as the key players, the targets or "receivers" of school improvement interventions. The Texas R&D Center studies focus on the influence of teacher feelings and behaviors, as well as how they configure the practice being implemented, on the success of implementation. The idea that change is highly individual and experienced differently by different individuals dictates the need for personalized interventions to make improvement efforts successful.

Studies by Rand and /I/D/E/A/'s League of Cooperating Schools emphasize the need for teachers to be personally involved in the improvement effort -- in designing, planning, assessing needs, implementing. The Rand studies add local construction of materials to this list of teacher contributions. Commitment of

teachers to a new practice is both required for this necessary participation, and a result of it. Both studies also point to the need for a critical mass of teachers to engage in an improvement effort; without collegial planning, engagement, and support, improvement is less likely to occur.

However, it is fair to say that the knowledge base on teachers' roles in innovation as we designed our study was far from strong. Though the need for teacher "involvement" and "collegial planning" was stressed often enough to be stereotypical, empirical data were ambiguous. For example, Sarason (1971), Lortie (1975), and Jackson (1968) had already pointed to the fact that teachers typically felt isolated and reluctant to engage in shared work with other teachers. Furthermore, these studies described teaching as a complex, uncertain, demanding craft; it was not at all clear that "innovations" could help, even if teachers were somehow "involved." As House (1974) pointed out, the teacher is in effect at the bottom end of the innovation chain, faced with many potential costs and few clear benefits. We wished to find out what the cost-benefit balance was in fact, and whether nostrums about "participation" and "shared problem-solving" made sense.

It should also be noted that the Rand and /I/D/E/A/ studies -- and the teacher role studies mentioned -- did not focus specifically on externally-developed and disseminated practices. It is one thing to talk about opportunities for teacher involvement when a practice is being developed locally, and quite another when the practice is being delivered from an external source. How do teachers become involved in these latter situations? How does commitment develop? And are both still key factors in successful school improvement? These were some of the questions left unanswered by previous studies.

People: Building Administrators

The importance of the building principal to school improvement efforts is supported by most of the studies, including those by Rand, /I/D/E/A/, and the Texas R&D Center. The Texas studies pointed out clear differences in teachers' use and feelings about new programs which appear to be directly attributable to principal commitment and active support. Both the Rand and /I/D/E/A/ studies described important tasks for the principal, including setting priorities and incentives, establishing appropriate conditions, and providing leadership and support. On the other hand, the NDN study found that principals did not make an especially important contribution to implementation; fortunately, they also did not interfere with it.

As we planned our study, it seemed quite likely that frequently-heard stereotypes such as, "The principal is the key to successful change," needed to be examined rather carefully. As Fullan (1982) notes, most studies of the actual role of principals in initiating, supporting, and guiding change efforts in schools date

from 1979 or later. We had little to go on beyond the general impressions suggested above, Emrick and Peterson's (1978) analysis of five change studies that pointed to the importance of principals' support, and some countering evidence, again from Sarason (1971), that suggested principals had very little time or energy to act as "instructional leaders."

Here again, most studies that pointed to the principal's contribution to school improvement were not those involving disseminated practices. Would a more careful look than the NDN study was able to give to the teacher/principal interface point out unique areas where principal assistance was important? We were hopeful that a closer examination would do so, and in addition would identify a set of actual behaviors that principals could use to enhance the implementation of different kinds of practices in different contexts.

People: District Assisters

Studies of school improvement spend little time elaborating on either the contributions or the roles of individuals who work in school district central offices. These individuals are most often mentioned incidentally, or as the conglomerate, "district support." The Rand studies found that, at minimum, endorsement from the central office was needed for implementation success, and that efforts were nearly always doomed to failure when well-placed individuals at the district level worked against them. Similarly, the /I/D/E/A/ Study mentioned district level support as helpful -- although not critical -- in schools that improved successfully. Rand further reported that "local leaders" (we assume some or all were at the district level) who knew the content areas covered by the new practices and had organizational and interpersonal skills delivered through an assistance "infrastructure," were critical. But the picture remained only dimly outlined. Though Daft and Becker (1978) found that district support staff played a crucial role in supporting users and in doing staff work for line administrators above them, Lippitt's (1979) look at the Rural Experimental Schools district staff found much uncertainty and commingling of line and staff functions in what they tried to do to support change projects.

Clearly, when our study was initiated, not enough was known about the specific contributions of district level staff. We particularly needed to understand their influence since they were often the initiators and advocates of the new practice at the local sites. What was the balance of direct advocacy/influence on the one hand, and support/assistance on the other? What were the roles they played? Which were facilitating; which were inhibiting? How did they interface with individuals in other roles? These and other questions were waiting to be explored.

People: External Facilitators

Assistance from individuals or agencies outside a school district has been occurring for some time, but only in the 1970s has the role of "linker" become a full-blown occupation. As noted earlier, several studies including the PIP and NDN studies reported the necessity for in-person assistance to accompany the introduction of new practices. Havelock's work on the process of linkage and the types of linker functions provides insights into possible roles, but only a handful of studies have detailed the specific contributions of these external agents, and the empirical data are thin.

The early study of the Pilot State Dissemination Project (PSDP) described three factors that contributed to the success of external linkers: their role as generalists (rather than selling a particular idea), their position outside the district, and their lack of power to mandate change. Together these characteristics heightened their acceptability to school people, and coupled with personal contacts made to offer and deliver information, linkers were able to significantly increase the schools' information-seeking behavior. Further analysis of the PSDP data by Louis (1977) showed that linking agent initiative, intensity of relationship with the client, and degree of expertise were all important factors in success. Likewise, the State Capacity Building study underscored the role of external linkage as one of importance to information use.

The Emrick et al. NDN study added most specifically to our knowledge of the contribution of external agents to the implementation of new practices. They found different and important roles played by the two kinds of linkers in the NDN. Developer/Demonstrators, who had developed and were funded to assist adopters to use a specific practice, provided in-depth information and training prior to implementation with some follow-up assistance and training during implementation. Most important were their interpersonal skills in relating to teachers, and personal follow-up by telephone or on-site to assist, evaluate, and reassure. State Facilitators, whose official function is to help schools identify needs and select from the range of NDN practices, were active in creating awareness through print materials and presentations, arranging for training by D/Ds, and helping local schools secure resources and organize for the new practice. They too made follow-up visits to assist, evaluate, and reassure adopters.

Two studies -- Rand and /I/D/E/A/ -- concluded that such external assistance was unrelated to goal achievement in school improvement programs. Rand's examination of local development efforts indicated that the "experts" brought in from the outside (typically professors from local universities) lacked commitment to the projects and most often performed "hit and run" workshops without follow-up. Datta (1981), re-examining the Rand data, noted that rejection of the usefulness of external assistance is

unjustified; sustained expert assistance was seen as decidedly useful by teachers -- more so than the participative planning meetings emphasized in the Rand conclusions.

The League of Cooperating Schools, the focus of the /I/D/E/A/ Study, relied heavily on strategies developed through an internal improvement process, where an externally-developed practice was not sought. They did make use of some of the research assistants as process helpers, but the idea was not to link the school with externally-developed knowledge as much as to develop internal capabilities to solve problems and bring the experiences and expertise of the school staff to bear on them.

Thus, when our study was initiated, there was some information, parts of which were contradictory, about the contributions of external assistance to school improvement. It is also fair to say, as did Hood and Cates (1978), that

Most conceptions of educational linking agents have been prescriptive and logical rather than descriptive and empirical (p. 25).

In addition, little of the information available had been integrated across strategies, or between "levels" of individuals and organizations involved in an improvement effort (i.e., teacher, school, district, intermediate agency, state, federal government). Did successful external assistance roles differ according to what school improvement strategy was being employed? (That is, did local development call for different kinds of help other than dissemination?) How did the activities of external facilitators affect individuals at different levels? (That is, did some work for teachers, others for principals, others for district staff?) Was there an optimum local "infrastructure" that connected internal and external sources of assistance? Finally, what arrays of external assistance roles could federal policies encourage, given the often different aims of school improvement strategies? These and other questions awaited a comprehensive study.

Context

The context within which a teacher adopts a new practice includes the local school organization, with its formal structure of roles and groups, and its informal culture and norms. It is trite, but correct, to say that the immediate context can have considerable influence on the success of a school improvement effort. The school in turn is embedded in a district organizational structure with its associated culture, which in turn is surrounded by a community setting.

Havelock and Havelock's (1973) synthesis of prior studies located 52 different factors that facilitated or obstructed organizational "input," "throughput," and "output," concluding that one of the most critical was autocratic versus democratic organizational structure. The former appeared to facilitate adoption, while the latter was more critical for internal variation and innovation. The Zaltman et al. collection (1973) also underlined the role of power in organizational innovation.

The RDU study was being designed and carried out in parallel with ours. Louis et al. (1981) comment that work on organizational contexts in two main streams -- the "strategies of change" perspective, and the "innovative organizations" perspective -- has resulted in somewhat disparate and non-cumulative contributions, and they call for an integrated approach. "Strategies of change" researchers have tended to miss the organizational context and its constraints, focusing too narrowly on the individual user; "innovative organizations" analysts have often ignored strategic issues and the effects of the innovation's properties.

The Rand study, an "innovative organizations" approach, found that a work climate receptive to the new practice was critical; few projects survived in a hostile or even indifferent environment. One element of the climate was institutional support, at both school and district levels; another was local "leadership," again at both levels. Neither concept was very precisely defined.

Climate is emphasized much more, with interpersonal overtones, in the study of the League of Cooperating Schools (/I/D/E/A/), a "strategies of change" approach. Where successful school improvement occurred, teachers described the school as flexible, cooperative, friendly, with task-oriented communication networks and teacher influence over decisions affecting the school. Schools where improvement efforts failed to materialize were rated lower on these dimensions, lacking a consistent, supportive climate in which new ideas could be discussed and tried out.

When our study was begun, little was known about the influence of the local context over the success of practices introduced from the outside. What were the dynamics of the school's internal climate, and the forces of support and opposition from the immediate and larger setting, that contributed to successful improvement efforts? We were helped by both Rand and the /I/D/E/A/ study to articulate precise questions; what we needed next was to ask these of school staffs involved in federally-supported change.

Implementation Process

The process of implementation entails a flow of more or less managed events relevant to the encounter between users and an innovation, seen in an organizational context. As we remark in Volume IV, the process is a messy, rich one that defies standard categories and simplistic efforts to understand it. Furthermore,

the process of implementation (leading to eventual institutionalization -- or discontinuation -- of the innovation) occurs typically over an extended time period, as long as two to five years, according to a number of studies (Texas, Rand, NDN).

Implementation strategies have been classified according to general orientation (e.g., problem-solving or opportunistic, as in the Rand studies), and more "desirable" orientations such as problem-solving have been analyzed for critical behaviors (e.g., problem identification, solution examination, solution selection, implementation, evaluation/incorporation, as in the RDU Study). Many different studies have attempted definition of phases in the implementation process (see Havelock and Havelock's 1973 synthesis; Texas, Rand, RDU, NDN) with the associated idea that different interventions by internal and external change agents will be required at different phases. It also seemed clear that just as early work on innovation had emphasized an "adoption" perspective (Rogers, 1962) and later work began to deal more directly with "implementation" issues, we would have to push still further forward to understanding "institutionalization" dynamics as well.

The Rand study also examined implementation strategies in terms of their specific tactics, concluding, for example, that local materials development, project planning, frequent meetings, and concrete and locally-led training were associated with more effective outcomes. These findings too needed confirmation/verification.

We initiated our study at a time when many of these findings were still coming in. As noted before, few prior studies traced the implementation of a new practice from its source to a teacher's classroom, examining the dynamics of the change process at all levels and from the perspectives of each individual involved. We had the opportunity to do so -- to look at many factors in the implementation process and ask which ones contributed to success under what sets of conditions. The potential existed to "put it all together," furthering our understanding of the school improvement process.

This ends our review of previous studies and the knowledge base on which our study rested. In the next chapter we describe how the study evolved, and how we designed our effort to respond to the questions about school improvement that remained unanswered.

CHAPTER II: THE STUDY

Section 1: The Study's Evolution

The Objectives

In 1978, the U.S. Office of Education decided to take a sweeping look across the large number of dissemination strategies that it supported to encourage improvement in schools. USOE staff realized that the accumulated results of studies that had been done, or were being conducted at that time, would not provide both the broad-based and intensive understandings of the complex improvement process the office was orchestrating. The study they sought to fund would portray the "state of the scene" in federally supported dissemination, while it also filled in gaps in the understandings of specific program factors affecting the improvement process.

More specifically, the study objectives, as articulated by USOE and incorporated into our plan of work, were:

1. To examine assumptions underlying current and alternative dissemination strategies.

Although several strategies had been or were being studied to better understand their operations and impacts, no analysis had as yet been made of their underlying assumptions. Such an analysis would allow examination of how assumptions were played out in policies, strategies, operations, and actual improvement efforts supported by a particular program. Were these in fact consistent with the underlying assumptions? How did different assumptions lead to different improvement activities and thus to different outcomes? Or did they? Examining assumptions could form a solid framework for the pursuit of other objectives.

2. To determine the extent to which and the ways in which exemplary projects are implemented in new sites and the conditions that contribute to or are obstacles to their effective implementation.

Here the interest is clearly in the implementation of new practices: do new practices actually get implemented, and if so, how and why? Previous studies provided clues to these questions but, as noted in the last section, had not been able either to look closely at classroom implementation or to cut across several different federal strategies. However, these studies did suggest several factors that influenced implementation, as well as offering several new methodologies for examining the factors; so this objective could be approached from a solid starting point.

3. To explore and describe the structure and operations of major dissemination activities conducted by various USOE programs.

Our description of the evolution of federal dissemination policy indicated a profusion of programs funded by USOE, most of which had a significant dissemination component. In an effort to rethink federal policy, USOE needed a "directory" of these programs to more clearly indicate what programs were using which strategies to actively pursue which kinds of activities. Such a directory would achieve this goal.

4. To examine the relationship between federal dissemination efforts and state dissemination activities.

Extending the previous objective which sought to examine actual and potential coordination within federal programs, USOE was also interested in the interface between state and federal dissemination activities. Two studies cited previously (studies of NIE's State Capacity Building Program and OE's Pilot State Dissemination Project) contributed to understandings of state dissemination systems, but USOE sought a clearer understanding of whether and, if so, how these influenced implementation of practices at the classroom level. In addition, it wanted to show whether activities at two levels -- state and federal -- often with similar intentions, complemented, interfered with, or missed each other altogether. An addition to what was already known about intergovernmental operations was clearly called for.

5. To design and implement a formative evaluation system for the NDN.

This was the "service component" of the study, meant to use what was known about NDN objectives, activities, and procedures, to help contractors analyze and improve their own effectiveness.⁷

6. To recommend ways in which dissemination activities should be conducted in the future.

As a result of achieving the first five objectives, it would be possible to discuss the merits and shortcomings of existing federal dissemination efforts. The hope was not only that recommendations could be made for revisions in policy, but also that specific strategies and activities could be suggested for helping educators at all levels optimize their school improvement efforts.

⁷This evolved as a separate component of the study's workscope and is available in the form of a guidebook for practicing disseminators (see Bank & Snidman, 1981).

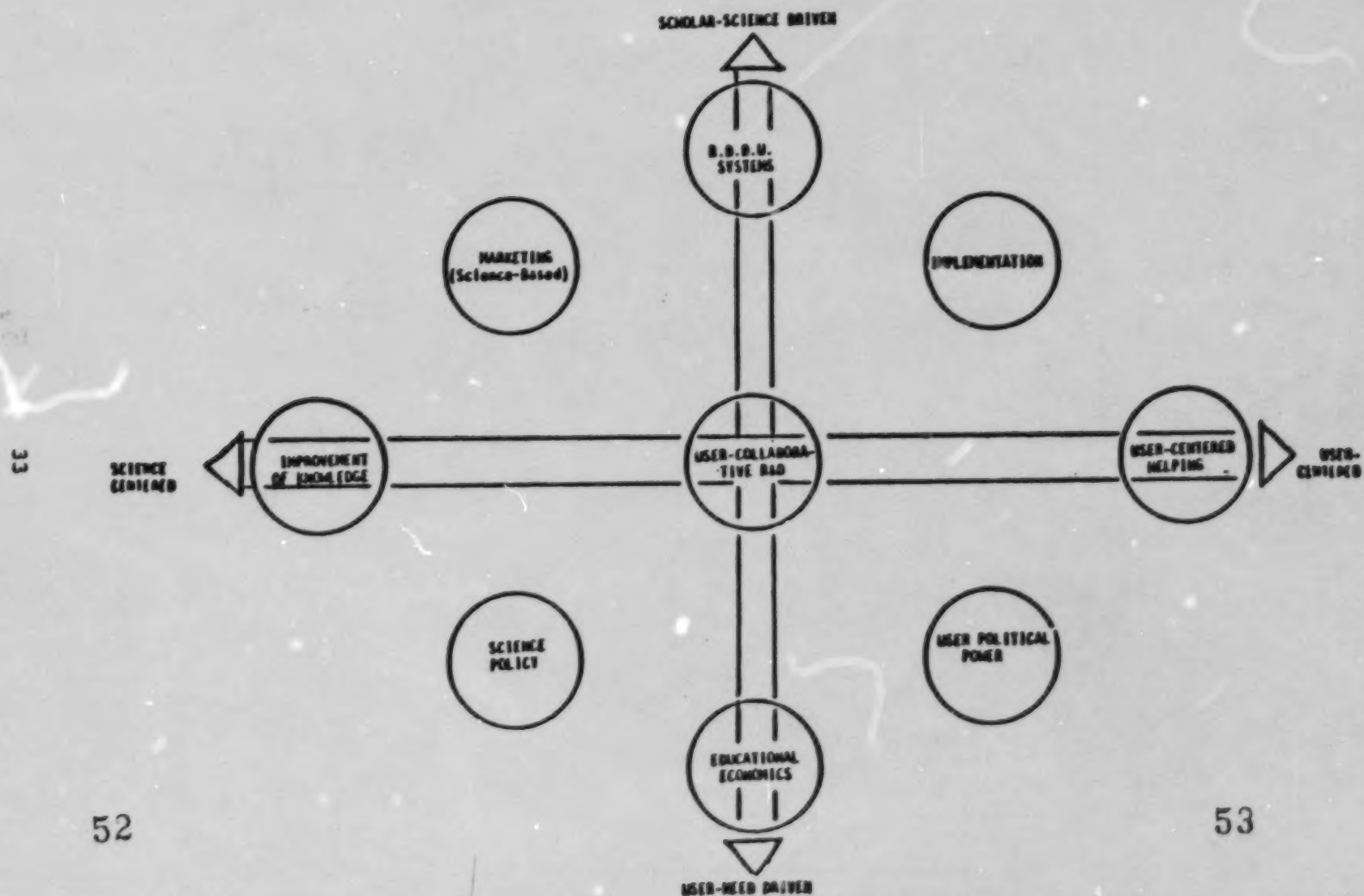
The Original Approach

From the brief discussion of the study's objectives, it is clear that, even with unlimited funds and unlimited time, no one research endeavor could address all the issues surrounding school improvement. To create an achievable research design, it was necessary to delimit research questions, setting boundaries on the processes that would be explored and selecting a manageable number of variables to consider. Two strategies could be employed to do so. One was to describe different models of the school improvement process, theories that had been advanced that accounted for the various players, dynamics, and outcomes. Examples of such perspectives are the Research, Development and Dissemination (RD&D) and local problem-solving models. We then could look for which of these models were being acted out in a sample of school improvement sites. A second strategy was to define the ingredients of the school improvement process, develop hypotheses about how they interacted, with what outcomes, and search for evidence of these dynamics in a sample of school improvement sites. We chose to do both.

The original proposal (The NETWORK, Inc., 1978) posited nine competing theories, or theoretical models, of the change process that differed along two dimensions: the extent to which school improvement was driven or initiated by the existence of science or new knowledge vs. needs of the user, and the extent to which the strategies employed were centered on the new knowledge or the users themselves. Figure 4 places the nine models on this matrix. It was proposed that the underlying assumptions of each model be identified, and then their explanatory and predictive power compared and contrasted using a multivariate analysis procedure. To undertake this investigation, we proposed to study four role categories (adopters, linkers, technical assistance providers, and policymakers) in terms of their behaviors, beliefs, and relationships to each other. Causal relationships would be explored to enhance our understanding of influences on school improvement outcomes, and the extent to which the actual processes studied conformed to any of the existing theories. Figure 5 illustrates the proposal conceptual scheme.

Following the contract award, the rethinking and reshaping in light of time and resource constraints began. As conceptualization of the school improvement process evolved, major areas of investigation took shape. The Conceptual Framework (The NETWORK, Inc., 1979) presented a complex "causal chain" of elements and relationships on which the study would focus. To answer the principal question, "What accounts for the success or failure of efforts to improve schools by implementing educational innovations?", a set of improvement effort success indicators were developed. Three clusters of key actors were identified: policymakers, external linkers and adopters. (Individuals providing technical assistance to linkers, identified as key players in the proposal, had dropped by the wayside, given their low priority relative to the other actors.) The causal chains

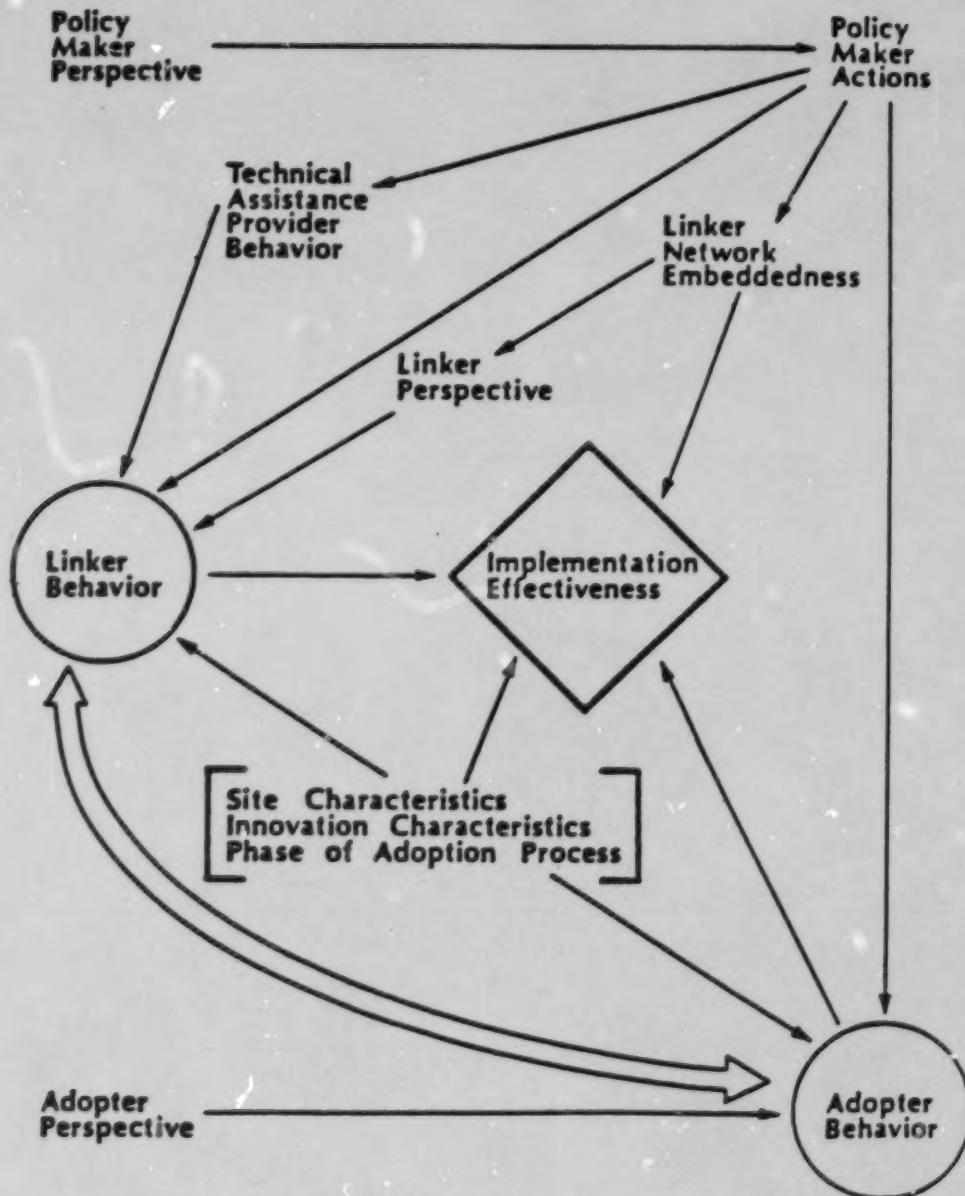
FIGURE 4: Nine Theories of the Change Process
Described in the Original Proposal



From: A Study of Federal and State Dissemination Strategies; Proposal Submitted to DHEW, Andover, MA; The NETWORK, Inc., 1978.

FIGURE 5: Conceptual Schema Proposed for the Study

**THE CONCEPTUAL SCHEME GUIDING
THE CAUSAL INVESTIGATION**



From: A Study of Federal and State Dissemination Strategies:
Proposal Submitted to DHEW. Andover, MA; The NETWORK, Inc., 1978

considered the interrelationships of their contexts, characteristics and behaviors, and in addition how these related to the characteristics of the practices being implemented. Tracing the possible causal chains resulted in an understanding of how the pieces fit together, and which relationships were the most relevant for study. Figure 6 summarizes the selected areas of investigation.

In addition to the examination of causal chains, the Conceptual Framework presented four conceptual models that would be tested by the study. These were:

- Political Process Perspective
- Bureaucratic Process Model
- Loose Coupling Perspective
- Individual Perspective

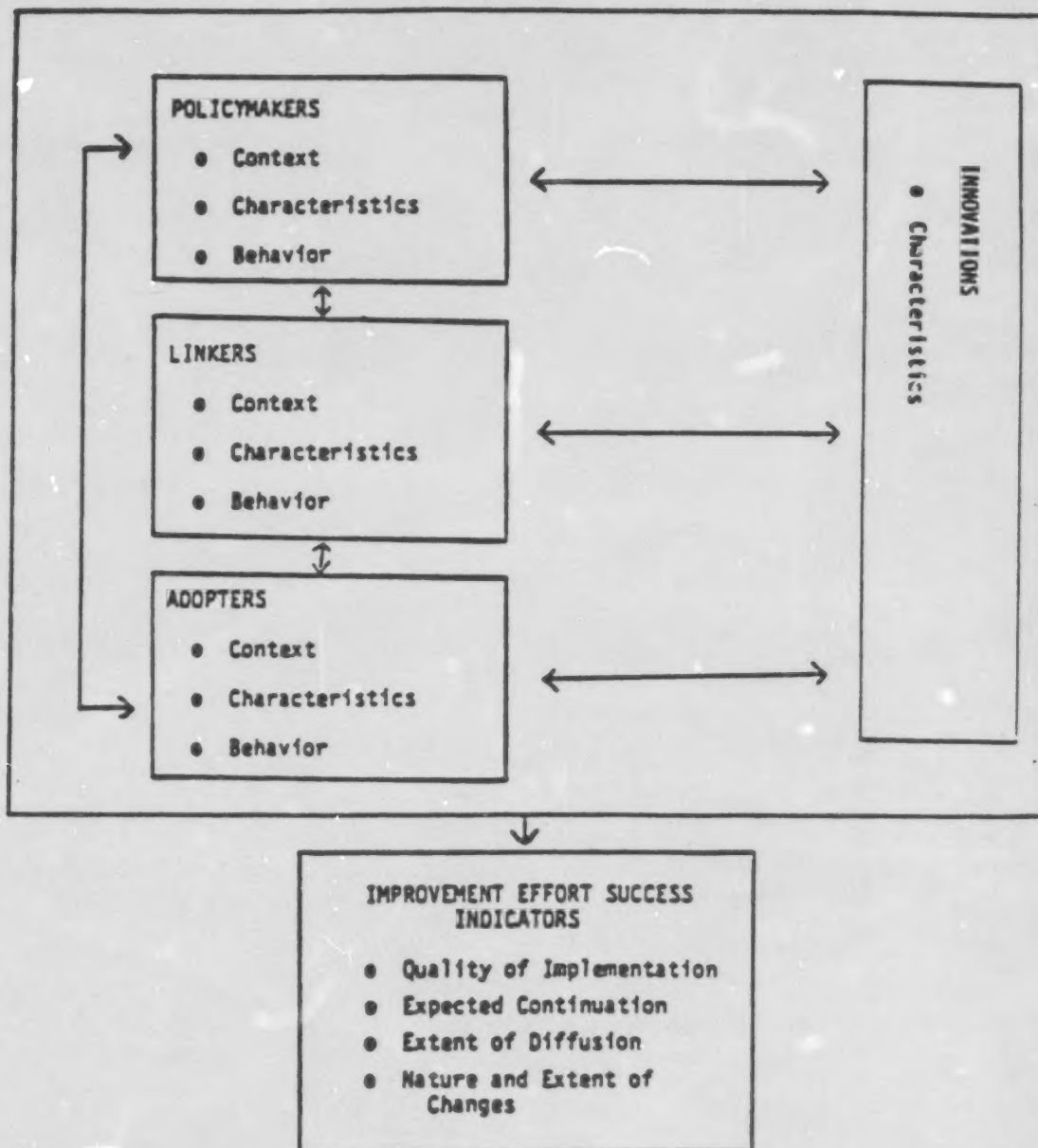
For each, important variables were suggested and causal paths indicated for leading to school improvement outcomes.

The conceptual framework, although it narrowed the number of conceptual models to be tested, and established boundaries for what areas the study would not consider (e.g., knowledge production), presented 348 individual variables for discussion and selection. The difficult next step was to go from conceptualization to operationalization: to pare down the variable list to one which could more realistically be pursued in a constrained data collection effort. The challenge was not to eliminate any variables that would "account for a significant amount of the variance" in any of the school improvement outcomes, or make it impossible to fully test each of the four conceptual models.

As the aspirations of the conceptual framework met the realities of data collection, we maintained our intentions of discovering the key factors influencing the policy-to-practice links while succumbing to the elimination of a large number of variables. In some cases variables were dropped because they were difficult or impossible to measure; in other cases because they appeared of minor importance compared to others. Because of our deliberately eclectic approach to data collection (see next section for discussion), we were able to assign some variables to study by survey -- while others were the focus of case studies at the federal, state, or local level and appeared in the cross-site analysis carried out as part of the field study (see Volume IV). The diversity of researchers contributing to the study also ensured that a set of variables remained that would help us test eventually a number of perspectives: individual, organizational, cultural, among others. The data base was set up so that data would be accessible to construct different models and explore different realities of implementation.

We also should outline briefly here the conceptual framework developed to guide the field study. Since we could collect data in the selected field sites over time, we wanted a dynamic model

FIGURE 6: Areas Selected for Investigation



From: A Study of Dissemination Efforts Supporting School Improvement: Conceptual Framework, Andover, MA; The NETWORK, Inc., 1979.

of the implementation process. Figure 7 displays that model. It shows how the school's external context, the nature of the innovation itself, and assistance provided impinge on the school (seen as a "host") and lead to the negotiations around the adoption decision. The model also posited a three-way set of transformations in the innovation, its users, and the school organization, all leading to outcomes as noted.

The conceptual model was used to develop a series of 34 specific research questions (on issues such as characteristics of the innovation, adoption processes, effects on school organization, etc.) that guided data collection.

As field work continued and informed our reconceptualization of the model, we recast the general structure of the model as shown in Figure 8, and differentiated the outcomes into the following list: stabilization of use of the innovation, percentage of use (internal diffusion within the school and district), institutionalization, student impact, user capacity change, and job mobility of users and administrators. Field work also helped clarify further the basic set of explanatory variables which appear in Chapter VI of Volume IX (Implications for Action) where we explain the outcomes achieved.

As instrumentation and data collection procedures for all parts of the study were developed, data collected, and preliminary analyses run, a series of dialogues took place among the researchers contributing to the study, and between the researchers and the project officer, Ann Bezdek Weinheimer. In Chapter IV of this volume, we describe in detail the models that resulted from testing clusters of variables to understand their influence on outcomes of school improvement. We dropped those variables we found unrelated to outcomes and finally derived three explanatory models: one individually-focused, one organizationally (school) focused, and one focused on the assistance of the external facilitator. Thus these models resulted from a combination of empirical testing and best guesses by "expert judges," and ultimately replaced the four conceptual models postulated in our Conceptual Framework (i.e., Political Process, Bureaucratic Process, Loose Coupling and Individual Perspective). We believe that it would be possible to test these latter four models, given the data that were collected, although we were unable to do so during the course of the study.

The variables that were selected and thus formed the basis of our data base are discussed, with our descriptive findings, in Volume II. Volume III describes in detail the evolution and testing of our explanatory models.

With this brief discussion of what was studied, we now turn to how the study was conducted. Several unique characteristics and innovative techniques make the study's approach especially interesting, for they were combined to meet the challenge of bringing good minds, new ideas, and a broad range of perspectives to bear on a complex set of questions and concerns.

FIGURE 7: Field Study Conceptual Flow Chart
(Initial Version)

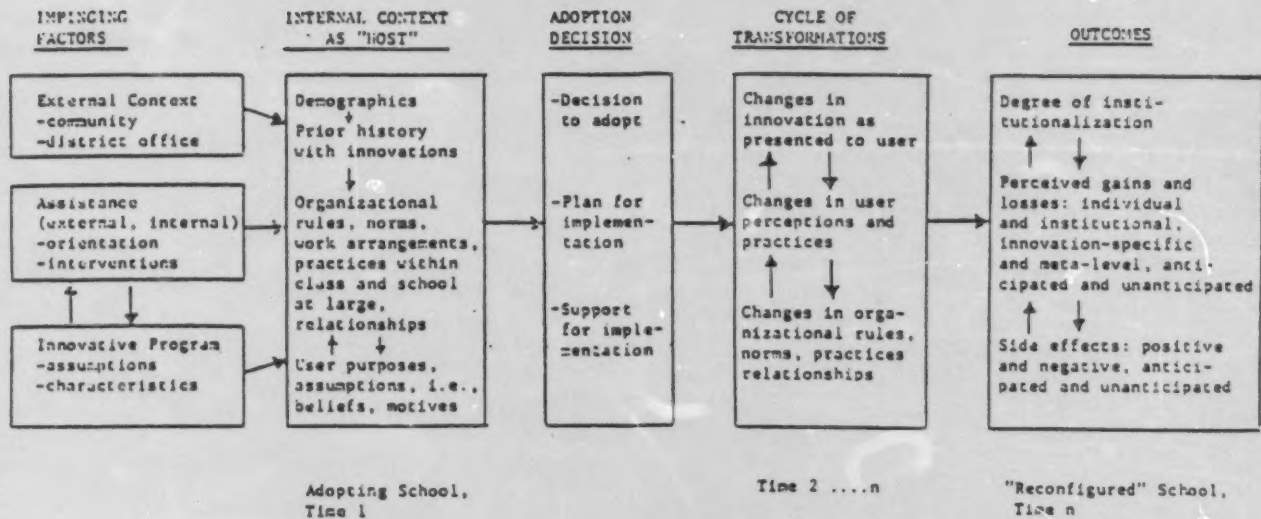
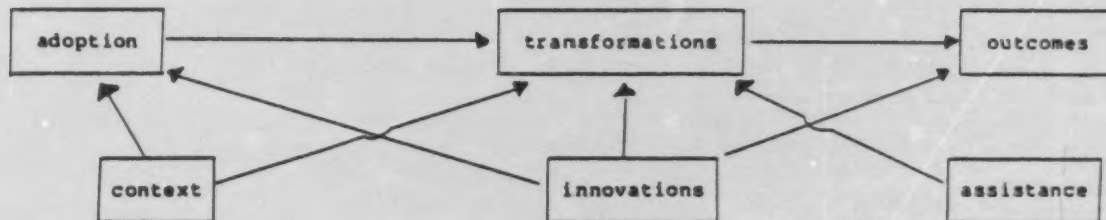


FIGURE 8: Revised Flow Model for Field Study



Section 2: The Study's Unique Approach

The study was one of the largest in scope, complexity, and resources that USOE had funded. As such, it required an eclectic approach in terms of focus, perspective, research methodologies, and management procedures. This unique approach was in one sense an experiment in large-scale, collaborative research, and as experiments often go, some of the innovations paid off well, while others fell by the wayside. In this section we describe briefly the unique features of our approach.

A "Zoom Lens" Design

How could a single study both survey the broad range of federal and state dissemination strategies and, at the same time, focus in on what makes an individual classroom teacher change his or her teaching practices? The design called for starting with a wide angle snapshot, then "zooming in" to the classroom level. This we did by decreasing the number of strategies and programs studied as we increased the intensity of the investigation. We began at the broadest level by launching a search mission to find all federal education programs that had a dissemination focus or at least a dissemination component. These 45 programs were described in an Overview (Hellmer, Harris, & Thompson, 1981). We then selected 15 of the most prominent programs for more in-depth case study analysis, detailing their history, underlying assumptions and core strategies (Shive & Eiseman, 1982; Thompson, 1982). (This same depth of study was applied as we explored the dissemination activities within ten states selected to represent the continental United States.)

Focusing still further, so that the impact of federal programs on the classroom might be examined, we selected four quite different strategies, some utilized by more than one federal program. These strategies were:

- Interpersonal Linkage of Validated Practice, exemplified by the National Diffusion Network (including ESEA Title I and Follow Through, both of which use the NDN),
- Commercial Distribution, exemplified by the Bureau for the Educationally Handicapped Market Linkage Program,
- State-Administered Dissemination, exemplified by ESEA Title IV-C Adoption Grants, and
- Local Invention/Development, exemplified by ESEA Title IV-C Development Grants.

This narrowing-in allowed us to do a rather intensive survey of 146 school districts affected by these 4 strategies. As the zoom lens reached its final focal point, our field study team studied in fine detail the activities of 12 of our 146 schools over the course of a full school year. Thus the "zoom lens" design, an innovation in research methodology, allowed us to be both broad-based in our scope, and fine-tuned in our investigation.

Collaboration

In the same way that educational systems moved more and more into combining constituency groups to work on common problems in schooling, we determined to bring together a set of individuals and organizations whose collective expertise represented the "state of the art" in research and practice. Those who would actually do the work, The NETWORK and its subcontractors, had been and were currently engaged in "cutting edge" examinations of various facets of the school improvement process. These players included:

- The NETWORK -- research on and linkage experience in school change, technical assistance, communication linkages, directed by David Crandall, joined by Charles Thompson, James Taylor, and Joyce Bauchner.
- Knowledge Transfer Institute, American University -- research and conceptualization of innovation processes and linkage functions, principally conducted by Ronald Havelock and Pat Cox, joined by Michael Huberman.
- R&D Center for Teacher Education, University of Texas at Austin -- research on implementation, principally conducted by Gene Hall and Susan Loucks.
- Center for Policy Research -- research on organizational dynamics of educational innovation, principally conducted by Matthew Miles.
- Center for the Study of Evaluation, University of California at Los Angeles -- evaluation research and development, principally conducted by Adrienne Bank.

As the collaboration of these principal players evolved, the work of conducting the study was divided among them. Federal and state policy study, and local site coordination, and data collection in all but NDN sites was done by The NETWORK. American University took responsibility for the study of linkers for each of the four strategies examined at the local level. The Texas Center collected data in NDN sites, while the Center for Policy Research was responsible for the field study. Finally, the UCLA Center developed the formative evaluation system for the NDN, the study's service component.

The collaboration extended beyond the prime and subcontractors to advisors. The Policy Advisory Group⁸ offered collective advice to overall planning early in the study, and at later points individuals were called on to bring their expertise to bear on specific problems and issues. Several special consultants offered more sustained assistance at various points, including data analysis (William Schmidt), writing (Jeffrey Eiseman), and assistance in planning (Ann Lieberman). Federal program staff, from the project officer (Ann Weinheimer) to managers of programs under study, contributed extensively and intensively from design through data collection and analysis. Finally, the respondents from whom data were collected were considered and treated as colleagues in the endeavor. Not only were they asked for data specific to study needs, but they were asked to comment in general on their experiences in school improvement, and to raise issues and concerns that could be incorporated into recommendations to policymakers. Respondents also were updated several times on study progress, and findings were shared as available.

The collaborative effort proved, as predicted, to have advantages and disadvantages. Among the former were the collection of cutting-edge methodologies we were able to use, the variety of perspectives brought to bear on design and analysis, and the unabashed camaraderie that developed from focusing energies from people spread across the country on a common set of research questions. Disadvantages included the extra time and resources necessary to bring people together, to get consensus and share information, and much more ambiguity for longer periods of time than if the study had been done by a single staff in a single location.

Blend of Research Methodologies

Early in conceptualizing the study, it was clear that a single research methodology would not serve to answer all of the study's questions. Not only were multiple techniques and approaches called for, but these would have to be blended creatively to be certain our painting of reality was complete, accurate, and valid.

The study relied on a mix of quantitative and qualitative ethnographic observations, loosely structured interviews, questionnaires, and document searches. The blended design had many advantages. The ethnographic observations contributed by:

- providing a holistic portrait of local implementation, over time,
- identifying causes and determinants of implementation success,

⁸Policy Advisory Group members were David Clark, Eleanor Farrar, Michael Fullan, Hendrik Gideonse, Egon Guba, Ward Mason, Milbrey McLaughlin, and David Wiley.

- allowing respondents to communicate their perspectives in their own way, and
- making it possible for unforeseen aspects of local implementation dynamics to emerge.

The loosely structured interview component assisted by:

- yielding data on the respondents' theoretical positions that could be articulated in later stages of the study, and
- tapping the subtle and unique combinations of attitudes held by the respondents.

Embedded in the interviews for teachers using the innovations were questions that ascertained the individual's Level of Use (LoU) and use of specific innovation components. These questions, previously validated by developers at the Texas R&D Center (Loucks, Newlove, & Hall, 1975), allowed precise description of user behavior without costly, and therefore impossible, on-site observations.

Finally, the conventional procedures of questionnaire surveys and document searches contributed to the design by:

- ensuring that data collectors maintained objectivity,
- providing results of high replicability,
- furnishing data that easily lent themselves to a full range of quantitative data analysis procedures, and
- utilizing the least expensive data collection procedures known.

We not only employed different data collection techniques, we also took pains to incorporate -- and in some places create -- new and creative data analysis procedures. Classroom implementation was examined by developing a standardized Practice Profile for each innovation studied, which allowed us to assign scores to each user for fidelity, amount of initial change required, and extent of implementation. These values could then be compared across users and across innovations (Loucks & Crandall, 1982). Our field study component developed highly sophisticated data reduction and cross-case analysis techniques, allowing more objective, quantifiable analysis of case study data (Loucks & Huberman, 1983).

Content analysis techniques used for open-ended interview questions made survey data richer and more apt to reflect the respondent's true feelings or behaviors, while still yielding quantifiable (and so easily analyzed) information. Finally, the causal path analyses used to develop our models of implementation reflected "state of the art" quantitative methodologies.

This creative blend of data collection and data analysis techniques⁹ solved the dilemma of whether the study should opt for breadth or depth, in pursuing answers to the research questions. We were able to choose both, employing techniques which complemented, supplemented, and enhanced each other, as well as provided unique data and unique analysis procedures without which our final picture would have been incomplete.

Disseminating Study Findings

The NETWORK found its roots in a commitment to link schools to new knowledge and information about effective practices. Thus, we had charged ourselves from the start (as did the federal government) not to allow findings from the study that were useful to practitioners to molder on library shelves. Our dissemination plan reflected this commitment.

Besides writing and distributing documents, and presenting a report of findings to various audiences, we planned to suggest "action steps" that would derive from important findings. These action steps would be developed not only by study staff, but by the convening of "derivation conferences" for each respondent group. For example, a group of external facilitators would ponder findings about the impact of outside assistance on school improvement; this would be done for policymakers, school administrators, and teachers as well. The conferences would involve presentation of a small, focused set of findings, general discussion of their meanings, and then more in-depth considerations of how they might be interpreted, and what they meant for practice.

Results of the conferences would be combined with study staff ruminations to formulate a series of "planning steps" for consumers of study results. These would help practitioners plan more effectively for school improvement.

This unique approach to dissemination clashed with the reality of shrinking funds as the study neared its end. Unable to sponsor derivation conferences, we instead tapped individual practitioners for their reflections on findings. We formulated a set of presentations that ranged from short overviews to day-long planning sessions, and received input throughout these presentations about their relevance, reality-base, and usefulness. Thus the essence of the derivation conferences remains, and our commitment to the practice-research link was maintained.

⁹More information on these methodologies can be found in Chapter IV of this volume.

Our study was a large, complicated undertaking. These unique characteristics of our approach were chosen and/or developed to take advantage of the opportunity to experiment with the process of conducting research, while at the same time respond validly and completely to the research questions posed by the federal government. Our hope is that we both realize these goals, and at the same time, are able to make significant contributions to the field of research methodology.

In the next section we move back from how the research was conducted to what the focus of our examination was. In using our "zoom lens" design, we finally focused on four strategies for school improvement and traced their operations from policymaking to the classroom. In this next section, we describe these four strategies.

Section 3: Strategies Selected for Study: Four Approaches to School Improvement

In order to understand the influence of federal and state school improvement policies on classroom practice, we decided to select strategies that varied distinctly in their mechanisms for encouraging improvement activities, and in the assumptions that underlay those mechanisms. We identified four distinct strategies, and within each a programmatic exemplar. The strategies and sample programs are:

- Interpersonal Linkage of Validated Practice: National Diffusion Network (with ESEA Title I Dissemination as a secondary example)
- Commercial Distribution: Bureau of Education for the Handicapped Marketing Program
- State Administration of Dissemination: ESEA Title IV-C Adoption Grants
- Local Development/Invention: ESEA Title IV-C Development Grants

These strategies are all practice-based, which was necessary if they were to help us understand implementation of new practices with the goal of school improvement. However, they are not all dissemination strategies; in particular, Local Development/Invention was included to provide a contrast -- a "control group," in a sense -- to strategies that involved practices developed externally. One of our questions was whether this difference in the strategies would result in differences in practice, with subsequent differences in outcomes.

In this section we describe each strategy by identifying the major problem it seeks to remedy, and the strategy's underlying assumptions.¹⁰ We describe assumptions of our strategies at two different levels, the micro level and the macro level. Micro-level assumptions have to do with the conditions that are necessary and sufficient to effect improvement in classrooms, schools, and districts; which of these conditions may be presumed to be in place in most local settings; and which must be supplied through some form of direct or indirect federal support. For example, it may be assumed that programs developed by teachers, rather than by university or laboratory staff, are more likely to be implemented because of their credibility and practicability. Because it suggests conditions for classroom improvement, this is a micro-level assumption.

Macro-level assumptions have to do with the network of agencies and organizations through which missing but necessary conditions for improvement may be supplied to local educational institutions. For example, one macro-level assumption is that, because of their proximity, state education agencies know local needs better than the federal government.

After identifying the problem and underlying assumptions for each strategy, we describe the selected exemplary program, its evolution, its players, and its mechanisms of encouraging school improvement. We are then in a position, in the following section, to compare and contrast the strategies and make predictions about what we might find in schools.

¹⁰By "assumption" we mean a proposition that would have to be true if a program were to work. For example, a program may be said to "assume" that local schools have the knowledge and skills, if not the resources, to develop their own innovative programs. Thus the money the program gives directly to schools would be assumed to promote effective school improvement. In many cases the framers of the program neither recognized nor stated explicitly that the program was predicated on this assumption, though they may have done so. In a sense, the assumptions we identify are the "hypotheses" that may be tested by studying the actual experiences and outcomes of the program when implemented.

Interpersonal Linkage of Validated Practice

The major problem¹¹ that this strategy seeks to remedy is that many local schools lack demonstrably effective practices in important areas. The solution involves providing schools with opportunities to identify and adopt such demonstrably effective practices.

The strategy has several micro-level assumptions which describe conditions necessary for improvement to occur in schools and classrooms. These underlying assumptions are:

- Schools can be motivated to recognize the need for more effective practices, to search out and, once found, adopt them.
- It is more effective and efficient for schools to adopt practices developed elsewhere than to create their own.
- Practices developed by local practitioners in real school settings are more likely to be implemented and actually work in other school settings, than practices developed by "experts" outside of schools.
- It is possible to determine that a practice is effective by a formal and dispassionate scrutiny of outcomes (or at least minimize the risk that scarce money will be spent disseminating a program of negligible impact).
- Elements that make a practice effective can be identified systematically and abstracted from their organizational context.
- These elements, when packaged, transported, and replicated with a reasonable degree of fidelity in another setting, can produce similar positive outcomes.
- It is possible for teachers and schools to faithfully replicate key elements of an externally-developed practice.
- Schools need in-person assistance to implement new practices.

¹¹Here, we make an effort to be concise and crisp, deliberately simplifying problem statements and assumptions, so that later they may be more readily compared and contrasted. These statements clearly, then, do not describe the richness and subtleties of the programs themselves, which are discussed later.

This strategy also has several macro-level assumptions that consider the networks external to schools which support the improvement effort. They are:

- External stimulus is necessary for schools to launch improvement efforts.
- Schools are best supported in their improvement efforts by individuals with competence, credibility, and flexibility, who do not necessarily occupy a formal position in the intergovernmental system. The best way to fund such individuals is directly through a federal discretionary grants program.
- Individuals who develop new practices are the most qualified to communicate them to potential and actual users.
- A network of professional external facilitators gains effectiveness through a shared sense of commitment and opportunities to collaboratively increase their technical knowledge.

The National Diffusion Network (NDN)

The NDN is the largest, most active example of the strategy we call Interpersonal Linkage of Validated Practice. In this section we provide a short history of the NDN, and then describe what it looks like in practice.

The National Diffusion Network (NDN) began in 1974 with the last year of federal discretionary money from ESEA Title III, which supported development of innovative practices by local schools (described in detail later in this section). Assuming that the end had come for direct federal support for local innovation, the managers of Title III decided to use their final \$9 million to fund local projects to diffuse Title III innovations that had already been developed. One group of grantees diffused individual practices that had been approved by the Joint Dissemination Review Panel (see later discussion), and another group of grantees helped the schools in their regions to adopt and implement those practices. After showing an impressive number of adoptions, surviving FY 76 with no funding at all, and broadening its appeal to other program offices, the NDN established itself in USOE as a national "delivery system" for diffusion of innovations developed with funds from a broad range of federal education programs.

The NDN strategy takes new practices developed by local practitioners and validated through a formal evaluation procedure, and diffuses them to schools by means of a network of professional linking agents. Three critical elements are involved: the populism of practitioner-developed knowledge, the scientism of formal evaluation procedures, and the pragmatism of professional linking agents. These elements rest on the assumptions noted earlier.

- (1) The NDN disseminates what practitioners have developed. NDN practices have been developed by local practitioners in real school settings. Tactically, the practitioner's "signature" on the innovation lends it credibility in the eyes of other practitioners who must be persuaded to adopt it.
- (2) The NDN disseminates what scientific evaluation has judged to be effective. Formal and dispassionate scrutiny of outcomes is done through the Joint Dissemination Review Panel. This panel, made up of staff members from the Department of Education, reviews claims of effectiveness of new practices, most of which were developed with federal funding, to determine if there is adequate evidence that they work. To be eligible for NDN funds, programs must be "validated" by the JDRP. (A more detailed description of the JDRP is presented by Shive and Eiseman, 1982.)

Projects validated by the JDRP and given dissemination funding by the NDN are packaged, transported, and replicated with a reasonable degree of fidelity in schools and districts across the country. Thus a "pool" of good practices exists for dipping into by others.

- (3) The NDN disseminates by a means of corps of full-time, professional linkers who know the practical business of introducing innovative practices into schools. The strategy of Interpersonal Linkage rests on the premise that good practices do not diffuse themselves. Schools need technical assistance from the outside to help them learn about, choose, and implement new practices.

The NDN works through the interaction of two kinds of professional facilitators, Developer/Demonstrators (D/Ds) and State Facilitators (SFs). A D/D is the developer of the validated project who receives funding through the NDN to help local schools adopt and implement it. D/Ds are usually school practitioners rather than professional researchers or developers. While D/Ds are the sources of NDN's innovations, State Facilitators are the agents who put local school people in touch with the D/Ds. A Facilitator works with schools in a specific state or region within a state; a D/D may present his or her innovation in schools anywhere in the country. An SF may also provide financial and technical assistance to a local school that adopts a particular NDN practice. Some SFs are housed in state departments of education, but others operate out of private, non-profit firms or other organizations.

Title I Dissemination: A Special Case of the Interpersonal Linkage of Validated Practice Strategy

The goal of ESEA Title I was to improve schooling for poor children. The earliest strategy employed by Title I was to simply give money to the states, who passed it on to school districts

according to a formula. When, in the late 1960s, evaluations concluded that schooling for these children was not improving, the Office of Education decided to disseminate new ideas in the form of model programs to help schools educate these children better.

The Title I dissemination strategy, initiated in 1968, evolved through four stages. In Stage One, the strategy was to find good Title I projects, describe them in brochures, and send brochures to the states for dissemination to local Title I projects. When problems were encountered at this stage (including the inability of school people to read a brochure, decide to adopt a project, and implement it), Stage Two was initiated. Here, Title I projects were identified that met federal Title I regulations, were validated by the JDRP, and then packaged so that school people could implement them without assistance.¹² When these packages still did not make it to schools, OE funded NDN State Facilitators to bring them to the attention of local school people (Stage Three). Stage Four involved funding the original developers of the validated practices to disseminate them through regional awareness conferences held for local Title I project directors.

Thus Title I joined the NDN. Twenty-one Title I projects were funded as Developer/Demonstrators -- six of these had been packaged as PIPs in Stage Two. The projects were disseminated through normal NDN channels but in addition were the focus of attention at regional conferences, where Title I state and local coordinators were put in direct contact with the exemplary practices.

Title I dissemination is based on all the assumptions of the Interpersonal Linkage strategy, but it has some additional ones as well. First, the problem statement is elaborated: the major problem is that many schools lack demonstrably effective programs for improving schooling for poor children. Here, the area of needed improvement is specified. An additional micro-level assumption is:

- Practices that are especially developed for a population of poor children will be more effective with that same population than practices developed for more advantaged children.

An additional macro-level assumption is:

- Linking local practitioners directly with exemplary practices through regional conferences will cause them to implement those practices in their own settings more rapidly than without such conferences.

¹²As we noted earlier, these packages were called Product Information Packages (PIPs). For more detailed information, see Shive and Eiseman (1982) or Stearns and Norwood (1977).

Except for the specially-targeted practices and the regional conferences, Title I dissemination strongly resembles the NDN in general.

Commercial Distribution

A strategy significantly different from that utilizing interpersonal linkages and validated practices involves the commercial sector, utilizing the avenues already developed by educational publishers to disseminate products developed with federal support. The major problem that the Commercial Distribution strategy seeks to remedy is that many local schools lack materials for use in important areas of schooling. This lack of materials is solved through actions of the private sector.

The strategy has several micro-assumptions about local schools and teachers. These are:

- Teachers have a need for certain kinds of materials to use for special kinds of educational problems.
- Teachers already have the motivation and skills to put new materials to use.
- It is more effective and efficient for schools to buy materials than for them to develop their own.
- A defined, identifiable product can be readily transferred from one setting to another.
- Teachers have the capability to use new materials without training or extra resources, or without training or resources that are additional to those already available to the district. Or, new materials do not require new skills on the part of teachers.

This strategy also has several macro-assumptions about the vehicle delivering improved materials to local practitioners:

- If training or assistance is needed to help teachers use new materials, then those should be borne by the school district rather than by the federal government.
- There is sufficiently good communication within school districts and intermediate districts that materials purchased by these units are used in classrooms, where appropriate.
- Private publishers can disseminate government-funded products more efficiently and effectively than the government.

- If the government, through an intermediary, prepares its products for mail order dissemination and promotes them actively and fairly among publishers, the publishers will realize the profitability of marketing them and enter licensed agreements to take them on.
- Schools will use what they purchase.

The Bureau of Education for the Handicapped¹³ Marketing Program

The BEH Marketing Program uses commercial distribution as its primary dissemination strategy. Motivated by growing stacks of materials produced through BEH grants and the need for such materials in schools stimulated by the passage of P.L. 94-142, BEH devised the most extensive and regularized relationship with private publishers of any bureau or office in USOE. Products from a broad range of BEH programs are nominated by BEH project officers, screened for relevance to the Bureau's dissemination objectives by the Marketing Program, and if appropriate, forwarded to a Marketing Task Force. The Task Force is composed of representatives from commercial publishing trade organizations (e.g., the Association of American Publishers, the Association of Media Producers, the National Audio-Visual Association), representatives from small and large publishing companies, special educators, and marketing consultants. With support from a private contractor, LINC Resources, Inc. of Columbus, Ohio, the Task Force evaluates the commercial marketability of the product. For each product approved by the Task Force, LINC invites commercial firms to submit proposals with complete marketing plans for the product. LINC subsequently convenes a panel of marketing specialists to review the proposals and to recommend award of an exclusive license to produce and distribute the product. Since the BEH Marketing Program was set up in 1976, the Program has awarded over 100 marketing licenses to over 20 different publishers.

Although BEH programs continue to disseminate some innovations independently of the Marketing Program, and although some developers of BEH innovations have become Developer/Demonstrators in the NDN, the Marketing Program does represent the Bureau's principal dissemination thrust. BEH developers are encouraged to establish early contact with the Marketing Program in order to obtain guidance on how to make their materials more easily marketable. The marketing orientation has begun to extend to dissemination throughout BEH, as well as to other programs in the Department of Education (e.g., the Basic Skills Improvement Program).

¹³Now called the Office of Special Education.

State Administration of Dissemination

Another strategy used to support school improvement involves the states as the initiator of dissemination activity, rather than the federal government. The major problem addressed by this strategy, not unlike those for previously-described strategies, is that local schools lack effective practices in important areas. Here the state education agency is seen as the most appropriate administrator of resources for effectively confronting this problem.

Two macro-level assumptions underlay this responsibility given states:

- Because states are closer and more attuned to the problems and preferences of local educators, they can do a better job of providing relevant information and assistance to schools than can the federal government.
- Because states have constitutional responsibility for schools, they will mount their own efforts to disseminate information and assistance for improving school practices.

Given these assumptions, we believed that we might find ten different strategies for dissemination within the ten states we studied. It was possible to imagine many different ways that states could legally combine state funds with those provided by the federal government. Each state's strategy would then have a unique set of micro-level assumptions about how schools operate and the conditions necessary to support local school improvement.

What we found in the states were large differences in attention given to dissemination, in the organizational structures responsible for that role, and in the amount of centralization of the dissemination function. In all cases we found very little state money allotted to dissemination, and the federal funds directed at changes in classroom practice largely those of Title IV-C. Thus, our study of state-administered programs, initially intended to be widely diverse and idiosyncratic, converged on the use of Title IV-C monies to develop "mini-NDNs" within several of the states in our sample.

The state systems for disseminating exemplary practices involved the same micro-level assumptions as those of the Interpersonal Linkage of Validated Practice strategy. Those assumptions, listed on page 47, underlay validation and dissemination programs in six of our states: California, Illinois, Michigan, Nebraska, Pennsylvania, and Virginia. Programs of this type were not in place in the remaining four states (Arizona, Maine, Maryland, South Dakota).

The state-administered dissemination programs shared two components: a process for validation of practices developed in the state, and a system for disseminating the validated practices within the state. Validation processes ranged from those that

were much like the JDRP, to the federally-developed IVD (Identification - Validation - Dissemination) process, to procedures developed especially by the state. All but one validation process involved on-site visits as well as written submission.

The state dissemination procedures also varied. Some states funded developers to disseminate their practices; others funded school districts to adopt validated practices; others funded both. Dissemination strategies ranged from a state catalog, to printed media, to fairs, workshops, and conferences. In all cases, the state's Title IV-C staff were responsible for the activities.

Thus, the state-administered programs were aimed at improving schools by disseminating validated practices, much like the NDN but on a smaller scale. Little if any state financial support was directed to these programs, with primary reliance on ESEA Title IV-C funds.

Local Development/Invention

Early in the study we recognized the need to contrast schools implementing new practices as a result of dissemination with others whose improvement efforts were not influenced by dissemination. We decided to use an adaptation of a traditional control group design, selecting as the control another federally funded school improvement strategy, one that did not involve implementation of practices developed elsewhere. This was the strategy of Local Development/Invention, exemplified by ESEA Title IV-C local development grants.

The major problem that this strategy confronts is that local schools lack resources to encourage and support innovation. This strategy seeks to provide those resources more directly than the others studied.

Among the micro-level assumptions underlying this strategy are:

- Local schools are capable of developing and implementing good new programs and services if they have some additional resources.
- Local schools are motivated to improve themselves through the development and use of new practices.

Macro-level assumptions are:

- The best means for providing local schools with resources for innovation is through state administration, since states are closer to and more cognizant of local needs than the federal government.
- Because states are more cognizant of local needs, they are in the best position to set priorities for local innovation.

- Local schools that are capable and motivated to innovate can be reliably identified by state panels reviewing written grant proposals.

ESEA Title IV-C

The most appropriate example of the Local Development/Invention strategy for school improvement is ESEA Title IV-C. ESEA Title IV as amended in 1974 (P.L. 93-380) was the first sustained effort by the Congress to consolidate federal education programs. Part C of this Title contains elements of the former Title III program for strengthening the leadership resources of state and local education agencies.

Title IV-C is a large, decentralized grant program that channels money on a formula basis to state departments of education.¹⁴ These departments in turn award grants to local school districts which submit competitively superior proposals. These proposals set out plans to develop and carry out innovations in one or more schools within the district. They are reviewed and ranked by readers designated by the state IV-C authority. State Advisory Councils are designed to assist the State Coordinator for IV-C in administering and distributing funds. A small percentage of a state's IV-C money may be used for administrative purposes.

Unlike the other three strategies under study, Title IV-C does not focus upon taking an innovation developed in one setting and implementing it in another. Rather, it supports local schools in developing their "homemade" solutions to their own problems. It is, therefore, the only one of our strategies that is not an example of "dissemination."¹⁵

These four strategies -- and their programmatic exemplars -- formed the core of our study of implementation. But before tracing them from the policymaker to the classroom, we turn to our speculations about what we thought we would discover. How would the policies reflected in the different strategies play out? How would the activities of the various players -- teachers, principals, central office staff, external facilitators -- differ? And what different outcomes might we expect to result from the different strategies?

¹⁴Note that states have the right to use these monies to fund development or to fund adoption of already-developed practices. See more on the latter use of IV-C funds in the previous section.

¹⁵We should note here, however, that districts who receive Title IV-C development funds are expected to "disseminate" their programs in the last year of the grant. We saw little evidence of resources or energy being put into this activity, nor were we particularly interested in focusing on it, since our interest was in how the locally-developed program was implemented in the original district.

In the next section we use the strategies' assumptions and operations, as well as the past research discussed earlier, to predict what we believed we would find when we "zoomed in" on the school improvement process.

Section 4: Analysis of Selected School Improvement Strategies

Early in the study we examined 45 federal programs in depth, paying close attention to their underlying assumptions and how these influenced program operation. In the last section, we described four of these programs as examples of the diverse strategies used by the federal government to support school improvement. We found these strategies differed in their assumptions and in the ways they were structured at the federal level. But how would they look in schools? How would teachers, administrators, and assistants behave when these strategies were the source of efforts to improve? What outcomes would accrue from their use? Would these behaviors and outcomes differ according to the strategy being played out?

In this section we use the understandings about federal strategies gained early in the study to speculate about what we thought we would find when we examined actual implementation. We begin by contrasting the assumptions of the four strategies: how are they alike, and how are they different? We then discuss what this might mean for the various people and processes, as a strategy was transformed to a classroom practice. Would this look the same or different for the four strategies? If different, in what ways? This analysis will form a framework for reporting findings in the next volumes, and finally develop a picture of the reality of school improvement efforts -- from the classroom to the policymaker.

Converging and Diverging Assumptions

In this section we return to the domains influencing school improvement that we used to describe previous research in the area: policies, practices, people (teacher, principals, district assistants, external facilitators), context, and implementation strategy. For each factor, we discuss how assumptions of each of the four strategies are alike or different. Figure 9 tabulates this summary.

Policies

Assumptions about policy and policymaking do not seem to differ among the four strategies. Each assumes that policy has an influence on practice, that the decisions that are made at the government level and the strategies developed as a result, will influence both what goes on in schools and what results for students. However, the levels at which policy decisions are made do differ among the strategies. Although the State Administration of Dissemination and Local Development/Invention strategies begin with policies made at the federal level, these are quite broad and

FIGURE 9: Assumptions Underlying School Improvement Strategies

POLICIES	PRACTICES	PEOPLE			CONTEXT	IMPLEMENTATION PROCESS
		TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS		
INTERPERSONAL LINKAGE OF VALIDATED PRACTICES						
1. Policy has an influence on practice. 2. Policy involving national dissemination can appropriately be made at the federal level.	1. Practices developed in one location can be implemented with fidelity in another. 2. Practices developed by school people are more likely to be successfully implemented than those developed by "experts" located outside the educational system. 3. It is possible to determine that a practice is effective by objective scrutiny of its outcomes. 4. The key elements of a practice can be identified and extracted from its organizational context. 5. Practices developed in one setting can be equally effective in other settings when replicated with fidelity to their key elements.	1. Teachers are motivated to improve their classroom practice. 2. Teachers need new practices to help them improve. 3. Teachers can change their teaching behaviors. 4. Teachers need training to develop skills in using new practices, in addition to new materials.	1. School leaders are motivated to improve classroom practice. 2. School leaders have the abilities to select and implement new practices.	1. In-person delivery of new practices is a key ingredient for success. 2. School people who develop new practices are the best ones to deliver assistance. 3. A network of assistants is needed, whose role it is to make schools in a given area aware of the new practices available for them to implement.	1. Schools/districts are motivated to improve. 2. Schools/districts have the capabilities to use new practices.	1. New practices can be implemented, given help in the form of training and technical assistance.

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FIGURE 9: Assumptions Underlying School Improvement Strategies (continued)

POLICIES	PRACTICES	P E O P L E			CONTEXT	IMPLEMENTATION PROCESS
		TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS		
COMMERCIAL DISTRIBUTION						
1. Policy has an influence on practice. 2. Policy involving national dissemination can appropriately be made at the federal level.	1. Products developed in one setting can be used in another. 2. Products developed by school people are more likely to be used than those developed by "experts" outside of the educational system.	1. Teachers are motivated to improve their classroom practice. 2. Teachers need new products to help them improve. 3. Teachers can change their teaching behaviors. 4. Teachers need no training to help them use new materials, or no training in addition to that already available.	1. School leaders are motivated to improve classroom practice. 2. School leaders have the ability to select new products.	1. External agents (i.e., commercial publishers) are needed to distribute new products.	1. Schools/districts are motivated to improve. 2. Schools/districts have the capabilities to use new products. 3. Schools/districts have communication procedures so that teachers and others are kept informed about materials that have been purchased for their use.	1. Implementation will occur once a product is delivered to a teacher.

FIGURE 9: Assumptions Underlying School Improvement Strategies (continued)

POLICIES	PRACTICES	P E O P L E			CONTEXT	IMPLEMENTATION PROCESS
		TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS		
STATE ADMINISTRATION OF DISSEMINATION						
1. Policy has an influence on practice. 2. Policy made at the state level is more relevant to local needs than that made at the federal level.	1. Practices developed in one location can be implemented with fidelity in another. 2. Practices developed by school people are more likely to be successfully implemented than those developed by "experts" located outside the educational system. 3. It is possible to determine that a practice is effective by objective scrutiny of its outcomes. 4. The key elements of a practice can be identified and extracted from its organizational context. 5. Practices developed in one setting can be equally effective in other settings when replicated with fidelity to their key elements.	1. Teachers are motivated to improve their classroom practice. 2. Teachers need new practices to help them improve. 3. Teachers can change their teaching behaviors. 4. Teachers need training to develop skill in using new practices, in addition to new materials.	1. School leaders are motivated to improve classroom practice. 2. School leaders have the abilities to select and implement new practices.	1. In-person delivery of new practices is a key ingredient for success. 2. School people who develop new practices are the best ones to deliver assistance.	1. Schools/districts are motivated to improve. 2. Schools/districts have the capabilities to use new practices.	1. New practices can be implemented, given help in the form of training and technical assistance.

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FIGURE 9: Assumptions Underlying School Improvement Strategies (continued)

POLICIES	PRACTICES	P E O P L E			CONTEXT	IMPLEMENTATION PROCESS
		TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS		
LOCAL DEVELOPMENT						
1. Policy has an influence on practice. 2. Policy made at the state level is more relevant to local needs than those made at the federal level.	1. Only a practice developed at a particular site can adequately meet the needs of the site and have the desired outcomes. 2. Practices developed by school people are more likely to be successfully implemented than those developed by "experts" located outside the educational system.	1. Teachers are motivated to improve their classroom practice. 2. Teachers need additional resources to help them improve. 3. Teachers can change their teaching behaviors. 4. Teachers have the ability to develop and/or contribute to the development of new practices.	1. School leaders are motivated to improve classroom practice. 2. School leaders have the abilities to develop and implement new practices, or to manage the development and implementation of new practices.		1. Schools/districts are motivated to improve. 2. Schools/districts have the capabilities to develop and use new practices.	1. Implementation will occur once a practice is developed locally.

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allow for state interpretation and further iteration of the policies. The assumption here is that the state is "closer" to the school district, can understand needs better, and so is in a better position to make policy than the federal government. The two remaining strategies -- Interpersonal Linkage of Validated Practice and Commercial Distribution -- assume that the use of national networks will better serve the needs of schools to improve.

Practices

The four strategies diverge quite dramatically in their assumptions about new practices. First, three of the strategies -- Interpersonal Linkage of Validated Practice, Commercial Distribution, and State Administration of Dissemination -- assume that practices developed in one location can be identified, evaluated objectively, extracted from their contexts, replicated in another setting, and result in outcomes similar to those attained at the development site⁶. In contrast, the Local Development/Invention strategy assumes that only a practice developed at a particular site can adequately meet the unique needs of the site and have the desired outcomes.

All strategies assume that practices developed by school people -- those actively involved in the education of children -- are more apt to be acceptable and useful to, and more readily implemented by, other practitioners. This sets these strategies apart from the Research-Development-Dissemination-Adoption strategy, where practices result from research findings and development done most often by "experts" in universities, regional laboratories, or other R&D organizations. (We must acknowledge, however, that a small number of NDN projects have their roots in this latter strategy; but most are practitioner-developed.)

People

Teachers. All four strategies assume that teachers are motivated to improve their classroom practice and that, where improvement is needed, teachers need external resources to make it happen. And they all assume that teachers can change their teaching behaviors.

The strategies differ in assumptions about teacher skills needed to improve. The Interpersonal Linkage of Validated Practice and State Administration of Dissemination strategies assume teachers need training to develop skill in using new practices (i.e., training in addition to new materials). The Commercial Distribution strategy assumes that materials are enough, that

⁶ In reality, this is a set of assumptions about practices, any one of which could stand alone. For example, one might assume that a practice can be evaluated objectively, but cannot be replicated with any degree of fidelity. In Figure 9 we separate these assumptions.

teachers will use them and do so effectively without training. The Local Development/Invention strategy goes further to assume that teachers also have development capabilities, or at least contribute to the development of new practices. This is an interesting range of assumptions about the resources and abilities teachers bring to an improvement effort.

Building Administrators and Central Office Facilitators. The four strategies do not make specific assumptions about people in leadership roles -- either at the building or district level. They do, however, assume certain motivations and capabilities of schools. Since schools themselves cannot be said to be motivated or capable of anything, we can infer that it is the people within them that the assumptions refer to.

All four strategies assume that school people are motivated to improve, and that they have the abilities to select or develop new practices towards that end. They also have the capabilities to implement those practices, with the help of some external resources. The assumptions imply that school leaders either have these abilities themselves, or can bring together people who do, and can motivate them to devise and implement new practices.

External Facilitators. The strategies differ dramatically in their assumptions about external assistance. The Interpersonal Linkage of Validated Practice and State Administration of Dissemination strategies assume that in-person delivery of new practices is a key ingredient for success. They further assume that the people who developed the practices are the best ones to deliver the training and technical assistance. The Interpersonal Linkage strategy also assumes a need for a network of assisters focused, not on a single practice, but on making schools in a given area aware of the wide variety of practices available for them to implement.

The Commercial Distribution strategy assumes a need for external agents to distribute new products, but once "sold" to school people, no additional assistance, such as training, is given. The Local Development/Invention strategy makes no assumptions about external assistance, since development and implementation of the new practice are confined to the school or district site.

Context

As noted earlier, the four strategies assume that some schools are motivated to improve, and have the capabilities to use new practices. In addition, the Commercial Distribution strategy assumes that schools and/or districts have communication procedures such that teachers and others are kept informed about materials that have been purchased for their use.

Implementation Process

The Interpersonal Linkage of Validated Practice and State Administration of Dissemination strategies assume that new practices can be implemented, given help from developers in the form of training and technical assistance. The other strategies assume implementation will take place once commercial distribution or local development, both pre-implementation steps, occur. Neither strategy makes assumptions about specific processes for implementation.

Assumptions in Action

In the final analysis, a strategy for school improvement only works if changes take place in schools and improved learning results. In this section we proceed from the assumptions underlying each strategy to the expectations those assumptions imply for improvement efforts. Where one of the strategies is being used, what should be happening? How should people be behaving and feeling? What outcomes should be accruing? Again, we use the same framework for discussion, with the exception of policy. Since we are discussing the implementation of policy for each of the individuals and processes involved, we do not treat policy as a separate entity with its own implications for behaviors in school setting. (Figure 10 summarizes the discussion that follows.)

Practices

In settings where all four strategies were providing support, we would expect to see specific practices in use. The practices, however, would differ in their nature (i.e., product versus program), their intensity of use, and in the degree of adaptation that had been made in the original practice.

We expected that practices implemented as a result of the Interpersonal Linkage of Validated Practice, State Administration of Dissemination, and Local Development/Invention strategies would combine new materials (or a reorganization of old materials) with new teaching strategies or behaviors (such as grouping, testing, scheduling). They would consume a significant part of a teacher's curriculum and/or teaching time (i.e., they would be used relatively frequently, probably more than once a week). Commercial Distribution practices, on the other hand, would be stand-alone products: materials that were written, and/or audio, and/or visual in nature. They might be used quite infrequently (e.g., once or several times a year).

The assumptions underlying the Interpersonal Linkage and State Administration strategies that deal with validity of a practice's key components imply a need for user fidelity. Without those key components in place, the results cannot be ensured. So in locations where these two strategies are used, we would expect the practices to be used with a high degree of fidelity. By contrast, assumptions underlying the Local Development strategy imply that

FIGURE 10: Expected Findings for School Improvement Efforts

PRACTICES	P E O P L E			CONTEXT	IMPLEMENTATION PROCESS	OUTCOMES
	TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS			
INTERPERSONAL LINKAGE OF VALIDATED PRACTICES						
1. Practices in use in schools. 2. Combination of new materials with new strategies. 3. Used regularly. 4. Used with fidelity to key components.	1. Motivated to use the new practice. 2. Use the new practice. 3. Commitment to the new practice. 4. Benefit from the new practice. 5. Spend time in classroom use, organizing, planning, evaluating, training.	1. Supportive of teachers. 2. Help identify needs and new practices. 3. Arrange or allow for training.	1. Work directly with school people (most likely teachers) in training. 2. Another type assister helps assess needs, identify practice, arrange for on-site training. 3. Post-training assistance and/or monitoring. 4. Assistance perceived as useful by school people.	1. Environment open and conducive to change and innovation. 2. Some structures and procedures in place to facilitate decision-making planning, and ongoing functioning.	1. Need for different activities as implementation progresses: need assessment, practice identification, training, follow-up, monitoring.	1. High change in classroom practice. 2. High fidelity in use of the practice. 3. High impact on students. 4. Many benefits to teachers. 5. High institutionalization.
COMMERCIAL DISTRIBUTION						
1. Practices in use in schools. 2. New materials only. 3. Could be used infrequently.	1. Motivated to use the new practice. 2. Use the new practice. 3. Commitment to the new practice. 4. Benefit from the new practice. 5. Spend time in classroom use, organizing, planning, evaluating.	1. Supportive of teachers. 2. Help identify needs and new products.	1. Work with administrators to orient them to benefits of product. No assistance after sale.	1. Environment open and conducive to change and innovation. 2. Functioning communication channels.	1. No implementation activities planned or carried out.	1. Low to medium change in classroom practice 2. Low fidelity to components of the new practice. 3. Medium impact on students. 4. Some benefits to teachers. 5. Low institutionalization.

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FIGURE 10: Expected Findings for School Improvement Efforts (continued)

PRACTICES	P E O P L E			CONTEXT	IMPLEMENTATION PROCESS	OUTCOMES
	TEACHERS	BUILDING/DISTRICT ADMINISTRATORS	EXTERNAL FACILITATORS			
STATE ADMINISTRATION OF DISSEMINATION						
1. Practices in use in schools. 2. Combination of new materials with new strategies. 3. Used regularly. 4. Used with fidelity to key components.	1. Motivated to use the new practice. 2. Use the new practice. 3. Commitment to the new practice. 4. Benefit from the new practice. 5. Spend time in classroom use, organizing, planning, evaluating, training.	1. Supportive of teachers. 2. Help identify needs and new practices. 3. Arrange or allow for training.	1. Work directly with school people (most likely teachers) in training. 2. Post-training assistance and/or monitoring. 3. Assistance perceived as useful by school people.	1. Environment open and conducive to change and innovation. 2. Some structures and procedures in place to facilitate decision-making planning, and ongoing functioning.	1. Need for different activities as implementation progresses; need assessment, practice identification, training, follow-up, monitoring.	1. High change in classroom practice. 2. High fidelity in use of the practice. 3. High impact on students. 4. Many benefits to teachers. 5. High institutionalization.
LOCAL DEVELOPMENT						
1. Practices in use in schools. 2. Combination of new materials with new strategies. 3. Used regularly. 4. Adapted to the user's own situation.	1. Motivated to use the new practice. 2. Use the new practice. 3. Commitment to the new practice. 4. Benefit from the new practice. 5. Spend time in classroom use, organizing, planning, evaluating, developing materials and strategies, training.	1. Supportive of teachers. 2. Develop and direct implementation of new practice.	1. Outside experts might give training or consultation; no ongoing assistance. 2. Assistance perceived as useful by school people.	1. Environment open and conducive to change and innovation. 2. Some structures and procedures in place to facilitate decision-making planning, and ongoing functioning.	1. Implementation process would differ widely among users, with activities adapted to individual situations.	1. High change in classroom practice. 2. Low fidelity in use of the practice. 3. High impact on students. 4. Many benefits to teachers. 5. High institutionalization.

schools and individuals are the best judges of "fit," that each situation is unique in how a given practice needs to look. We expected to find much adaptation in the practices (from their conceptualization in the grant proposal), and a wide range among users. Finally, the Commercial Distribution strategy appears to have no expectations about fidelity. Its founders are more concerned with the fact that the product is available and used by teachers than that it is in use in any particular configuration.

People

Teachers. Assumptions underlying all four strategies imply that teachers are motivated to use the new practices, and that they actually are doing so. Since the practices were supposedly selected or developed with teachers' needs in mind, we would further expect to find that teachers are committed to the new practices and benefiting from their use.

To implement the new practices, regardless of strategy, we would expect teachers to be spending time in various ways: in classroom use, in organizing, planning, and evaluating. For all but the Commercial Distribution strategy, time would be spent in training; in the Local Development strategy, time also would be used for developing materials and new strategies.

Building and District Administrators. Since most of the practices supported by the four strategies are focused on change at the classroom level, there are not many specific expectations for administrators, either at the school or district level. For all strategies, however, we expected that administrators would not block or inhibit implementation through their actions or attitudes, but rather be supportive of teachers' motivations and attempts to use new practices. Their involvement in implementation might extend to helping identify the new practices or products accompanying all but the Local Development strategy, and in the case of the Interpersonal Linkage and State Administration strategies, arranging or allowing for training of the teachers. In the Local Development strategy, administrators would have some responsibility for development and implementation, or at least for managing and supporting both of these processes. Who takes these roles -- and whether they are at the school or district level -- is not a particular expectation of any of the strategies, nor are the assistance behaviors themselves actually specified.

External Facilitators. The four strategies differ widely in this area. For the Interpersonal Linkage and State Administration strategies, we would expect to see external facilitators (many of them practitioners) working directly with school people, particularly to train them in use of new practices. Teachers would probably be the target of these training activities. In the Interpersonal Linkage strategy, we would also expect assistance from outside the school district in assessing local needs, identifying a practice from a nationwide pool that would meet those needs, and arranging for on-site training in the new practice. In both strategies, some post-training assistance, either follow-up training or monitoring, might occur.

In the Commercial Distribution strategy, no training is expected. Administrators at both school and building levels might spend time with external agents who function largely as salespeople -- describing benefits and uses of the new practice, but having no further function once the product is bought. For the Local Development strategy, we might expect to see experts from outside the school district who provide training or consultation but do not work with the schools on an ongoing basis.

In cases where external assistance is part of the school improvement strategy, we would expect that the assistance is perceived as useful by the teachers and local administrators.

Context

In assuming schools' motivation and ability to improve, all four strategies appear to expect a school environment open and conducive to change and innovation. This might be reflected in the support behaviors of the people, or in the general "climate" of the school or district. Functioning communication channels are particularly important for schools affected by the Commercial Distribution strategy, since once a product has been purchased, people need to know it is available for use. The three other strategies imply a reasonable amount of structure and organization within a school, particularly the Local Development strategy, since selecting or developing and implementing a new practice require decision-making, planning, and follow-through. A setting where crisis management is the norm can hardly initiate and sustain a significant improvement effort.

Implementation Process

Assumptions underlying the Interpersonal Linkage strategy give the most attention to the implementation process, as do those underlying the State Administered strategy to some extent. It recognizes the need for different activities at different points in the process, from needs assessment to practice identification, training, follow-up, and evaluation. We would expect these activities to be occurring, to have occurred, or to be anticipated in sites involved with these strategies.

The Local Development strategy places most attention on the development phase, so it is unclear how the practice might be implemented. Perhaps the implementation would differ widely from teacher to teacher and school to school, since so much emphasis is placed on the unique characteristics of each setting and the ability of the teacher to adapt a new practice to his or her situation. We hold no expectations for implementation strategy used in Commercial Distribution sites, since the assumption is made that purchasing a product will result in use, with no attention to implementation.

Outcomes

In Volume II of this series of study documents we define, discuss, and report findings for a lengthy list of outcomes that we believed might accrue from a school improvement effort. Here, for the sake of brevity, we describe five outcome variables, and how we expected them to vary across our four strategies. These outcomes are:

- Change in the teacher's classroom practice;
- Fidelity to the components of the practice;
- Impact of use of the practice on students;
- Benefits of use of the practice to teachers (including increased skills, innovative strategies, professional growth); and
- Institutionalization of the practice within the school, i.e., whether procedures such as routine ordering of materials, new teacher orientation, and a budget line item, had been set up to ensure continued use.

As noted on Figure 10, we expected both the Interpersonal Linkage and State Administration strategies would result in high scores on each of these outcomes. Because the practices were adopted to provide teachers with new and different instructional strategies targeted at a problem area, we expected that there would be much change in their classroom behaviors. This change would result in greater student growth, significantly more than students had previously experienced. Further, since all of the adopted practices had been validated as "effective," we would expect an emphasis on fidelity to the practices' key components. Because of the training aspect, teacher benefits would be high. Finally, given the investment in time (training) and resources (materials, support personnel, etc.), and an emphasis on improving teacher skills to deal with an area of concern, we expected a significant degree of institutionalization of the new practice.

These outcome expectations were quite different for the Commercial Marketing strategy, given its focus on purchase/adoption, with little if any assistance or training given afterwards. We expected minor changes in the teachers' classroom practice, since the materials might be used infrequently; since no expectations for use were stipulated, fidelity would likely be low. Impact on both students and teachers might be expected (otherwise why would the purchase be made?), but not nearly as much as if the materials had a particular instructional approach attached to them. Finally, we expected that the materials would be institutionalized to a low degree; they would be "taken off the shelf" whenever an individual teacher purposely planned for their use, and would be unlikely to persist after the purchaser moved on.

Local Development outcomes were expected to be high, given that the practice was developed by a particular site to meet a special local need. Change in teacher behavior, implementing this new practice, would be high, as would benefits to both teacher and students. Fidelity, however, would be low, since the idea of adapting the practice to an individual need -- be it a need of a school, teacher or student -- is at the very core of the Local Development strategy. Finally, because the school or district was responsible for developing and implementing the practice, we expected that procedures would be set up to support the practice in ongoing use, thus insuring a high degree of institutionalization.

Figure 10 summarizes our expectations for how school improvement would be played out for each strategy. In later volumes our findings reflect whether reality met our expectations; our discussions interpret why or why not. Before turning to our findings, reported in the next seven volumes, we describe our study sample, design, data collection, and analysis in detail -- how we went about examining the players and phenomena involved in school improvement.

CHAPTER III: THE STUDY SAMPLE

Section 1: Introduction

The basic conceptual framework outlined in Chapter I provided a set of procedures and definitions which guided our sampling. All sampling decisions were based upon the following rationale:

- Schools were established with the primary purpose of providing an education for the youth of this nation;
- The ultimate criterion upon which any school improvement effort can be evaluated is that of the growth of or reception of services by students.

The study defined school improvement efforts as the implementation of practices which directly provided new or additional services to students. In addition, a major assumption underlying sampling procedures was that the forces at work in local schools critically influenced the implementation of new practices. Therefore, sampling procedures focused on selecting school districts in which there was a building where teachers were implementing a new practice. The selection of the school building determined the composition of our sample of new practices, teachers, administrators, external facilitators, and local district facilitators.

Prior to the sampling of school districts, we made two decisions. First, we chose the federal programs from which the districts would be getting support for the implementation of the new practices. We selected an array of federal programs which produced a sample of implementation efforts that were representative of a variety of federal strategies to foster school improvement. (See Chapter II, Sections 3 and 4 for details). After deciding upon federal programs, we chose a sample of 10 states in which the school districts would be located. We selected a sample of ten states in order to avoid the costs involved in visiting school districts randomly located across the whole country. However, the 10 states chosen, when taken as a whole, are representative of the 48 states in the continental United States.

In the remainder of this section, we describe the states, school districts, practices and participants which constitute the sample for this study. More importantly, we also describe the procedures by which we chose this sample and the rationale behind these procedures. Finally, we describe a few learnings about implementation and the population that emerged from utilizing these procedures.

Section 2: The Sample of Strategies and Programs

The Programs We Examined

In Chapter II we described the four school improvement strategies we examined, and the programs within each that we traced to the classroom level. These strategies and programmatic exemplars are:

- Interpersonal Linkage of Validated Practice: exemplified by the National Diffusion Network (with ESEA Title I dissemination as a secondary example)
- Commercial Distribution: exemplified by the Bureau of Education for the Handicapped Marketing Program
- State Administration of Dissemination: exemplified by ESEA Title IV-C Adoption Grants
- Local Development/Invention: exemplified by ESEA Title IV-C Development Grants

Selecting the Programs

Before discussing the procedures followed to select programs, we want to emphasize that programs were selected, not sampled. In general this selection was based on a review of information on state and federal programs. We applied the following criteria for selection:

- Did the program provide support for the implementation of new practices which were directly targeted for students?
- Were there records available which allowed for the identification of specific practices and school districts implementing these practices?
- In the case of dissemination programs, were there records which identified adopting school districts?
- Had the program been in operation long enough to allow for the identification of school districts which had been involved in implementing the identified practices for a number of years?
- When taken as a whole, would the programs represent the variety of strategies used by the government to support implementation of new practices?

In the case of federal programs, procedures were neither time-consuming nor problematic. The Department of Education provided descriptions of all the efforts which supported implementation of practices. Study staff then categorized programs by the nature of their strategy and scope of their support. In conjunction with our project officer, we selected the three programs (all but the state-administered effort).

In the case of the state-administered strategy, the selection of a program was more complicated. Information was not readily available as to whether any states had programs which fit our criteria. We also were unaware of the nature, scope, and number of such programs, if they did exist. We therefore decided to conduct a telephone survey of state officials prior to choosing our state-administered program. In order to avoid the cost of surveying all 50 states, we delayed the survey until we had chosen a sample of states for inclusion in the study. Once these states had agreed to participate in the study, we conducted our survey.

The survey involved telephoning each program office (often between ten and twelve) in each of the ten selected states. With the appropriate state officials, study staff discussed the nature of the study, the criteria for program selection, and the nature and scope of state support for implementation of new practices. If the state official and study staff agreed that an appropriate effort existed in the state, the official sent us documentation of practices and lists of implementing schools.

Upon completion of the telephone survey, we found that only state-administered Title IV-C dissemination efforts met the criteria of (1) administering the transplanting of a practice from one school district to another, and (2) maintaining records which allowed us to identify the developer of the practice, people engaging in dissemination of the practice, and those adopting the practice. Therefore the Title IV-C dissemination effort (i.e., Adopter Grants) became the program exemplifying the state-administered strategy.

Section 3: The Sample of States

The States We Visited

A goal of sampling was to yield a pool of school districts that were representative of school districts across the country. We thought that the state in which a school district was located might affect any effort the school might undertake. After all, states determined how schools were funded and the types of curriculum schools used; states had different subcultures, industries, racial mixes, levels of SES, and other characteristics. We also knew that limited time and money would make it impossible for us to involve in the study a large number of school districts that were located in a large number of geographically dispersed states. Therefore, we decided to select a sample of states which represented the variation across all states on relevant criteria. We would then choose school districts only in these states for participation in the study.

Selecting the States

As previously noted, we selected ten states. We chose ten states because ten seemed a small enough number to allow a reasonable number of sites per state (we averaged 14.6 sites per state), yet large enough to represent national distributions on these eight variables:

- total number of students,
- per-pupil expenditures,
- percentage of students in urban districts,
- number of students per district,
- number of federally supported centers (teacher centers, special education centers, and general education centers),
- US Office of Education funds divided by the number of students,
- attendance at the 1978 Dissemination Forum, that is, the number of participants from a given state who attended the most recent national conference on dissemination (a surrogate for active dissemination capacity within the state), and
- whether the Chief State School Officer is elected or appointed (a surrogate measure for political diversity).

We considered these variables to be especially relevant to the organization of school resources, to policy considerations, and to within-state dissemination activities.

To select the ten states, we used a computer program (Morris, 1975) that randomly divided the 48 continental states into a 10-state sample group and a 38-state non-sample group that were as similar as possible with respect to their means and standard deviations on the dimensions mentioned above. When the program generated several such ten-state sample groups, we selected the one that contained states to which travel for our study teams would be most convenient and least expensive.

The states we selected were:

- Arizona
- California
- Illinois
- Maine
- Maryland
- Michigan
- Nebraska
- Pennsylvania
- South Dakota
- Virginia

Section 4: The Sample of School Districts

After choosing programs and selecting states, we began to sample school districts. This process of sampling school districts was both extremely important and complicated. The importance stemmed from the fact that the selection of school districts determined these major elements of the study:

- the places we would visit, therefore many characteristics of the context in which the implementation took place;
- the participants with whom we could speak, their roles and personal characteristics; and
- the practices whose implementation we would be examining.

The following factors contributed to the complexity of the sampling of school district and buildings:

- each program involved going to different sources to find out what schools had been involved;
- each program had a different amount of information concerning what schools had been involved;
- the level of specificity and accuracy of available information varied from program to program; and
- finally, each program had a different set of procedures which we had to complete in order to get information concerning schools.

These complexities undoubtedly affected both the nature of the final sample of schools and the procedures we used for selection.

Selecting the Schools

For each program the selection of schools involved the following steps:

1. acquiring information from program records concerning participating schools,
2. contacting the sources of information about participating schools in our states and getting the information,
3. sampling schools based upon the information,
4. verifying with the school district or building that they had participated in the effort in which the program claimed they had participated.

If program records named only school districts, we had to identify a participating school building.¹⁷ All in all, the process of selecting schools was tedious and time-consuming, since program information was often scant or inaccurate.

In the sections that follow, we detail the selection and verification of schools in our sample by program, since the difference in the nature and record-keeping procedures of the programs required us to use somewhat different strategies for each.

Selecting National Diffusion Network (NDN) Schools

All Developer/Demonstrators (D/Ds) in the NDN were asked to provide a list of sites that (1) had adopted their practice during the school years ending in 1977, 1978, and 1979 and (2) were located in our ten sample states. All projects with fewer than 2 adoptions in the 10 states were eliminated from the list, thereby reducing the eligible NDN project pool from 128 practices to about 80. Each of the remaining practices was classified as a high, medium, or low adoption frequency practice according to whether it had, respectively, above 100, between 26 and 100, or fewer than 26 adoptions on a nationwide basis. (Note that we thus eliminated from our sample all NDN projects with very low adoption frequencies, at least across our ten states, which accounted for nearly one-third of the projects.)

The locations (e.g., Chicago, Illinois) of every adopting school named by these approximately 80 D/Ds were placed in random order on a single list. Beside a practice's location, we placed the practice's name, its adoption frequency classification (i.e., high, medium, or low), and the year the school adopted it. Next we selected the first 5 locations on the list that represented 5 different high frequency projects, the first 5 that represented 5 different medium frequency projects, and the first 5 that represented 5 different low frequency projects. At this point, we had selected 15 locations, as well as 15 practices. (Three of these practices, by chance, happened to be Title I projects, which we discuss later.)

We then reduced the size of the list (without disturbing the order of the school districts that remained) first by removing the locations already selected, then by eliminating all locations not

¹⁷Our intention was to sample schools (i.e., buildings) where a new practice was being used. Often we were given a district level contact, since the practice had been adopted in more than one school in the district. When this was the case, we asked the contact person to identify a single school where the practice was being used in a way typical of user schools. This gave us our sample school, and allowed us to continue our contacting procedures.

associated with the 15 selected practices. Returning to the top of the list, we selected the next location encountered for each of the 15 practices. Now we had selected 30 school districts, 2 each for 15 practices. We then placed the appropriate number of hash marks in Table 1, a tool we developed for a sample selection. The 30 school districts selected up to this point were distributed equally among the rows of this table, although not necessarily equally among the columns; specifically, each row contained 10 school districts generated from 5 practices, each practice generating exactly 2 school districts.

Next, we returned to the top of the list and selected each school district we encountered, simultaneously placing a hash mark in the appropriate cell of Table 1, unless the cell already contained 5 hash marks, in which case we skipped over that school district and went on to the next one. We did this until all 9 cells contained 5 hash marks; in other words, we had selected 45 sites.

Then, we noted which of the ten states did not yet have two school districts selected. Taking each of these states one at a time, we returned to the top of the list and selected the first school district within that state (and if necessary, the second school district) unless the cell that would receive the appropriate hash mark already contained 7 hash marks, in which case we skipped over that school district and went on to the next one. When we completed this process, we had between 5 and 7 hash marks in each cell and at least 2 school districts in every state.

To complete our initial NDN sample, we returned to the top of the list and continued selecting the first school districts we encountered whose characteristics were still desired (meaning that the corresponding cell still contained less than 7 hash marks) until we had placed 7 hash marks in each cell. This process yielded a sample of 63 school districts, with a minimum of 2 school districts per project, as well as at least 2 school districts per state; the 63 school districts also were equally divided among year of adoption and adoption frequency classification.

**Table 1: Our Mechanism for Monitoring Characteristics
of the NDN Sites We Selected**

Adoption Frequency Classification of the Project Implemented	1976-1977	School Year in Which Adopted	
		1977-1978	1978-1979*
High (more than 100 adoptions nationwide)	**		
Medium (between 26 and 100 adoptions nationwide)			
Low (fewer than 26 adoptions nationwide)			

*We only included sites where the adoption decision had been made prior to December 31, 1978.
 **We placed a hash mark in the table for each site we selected, the cell being determined by
 (1) the adoption frequency classification of the project implemented, and (2) by the school
 year in which the site decided to adopt the project.

Verifying NDN Schools

We now had selected an initial NDN sample. Next, in following our procedures we called each school district to:

1. verify that the practice had been adopted by someone in a district school,
2. identify the school building(s) in which the practice had been or was presently in use,
3. get permission to collect data within the district and in one of the buildings (if more than one) where the practice had been implemented.

In order to accomplish these steps, we telephoned a contact person whose name had been provided by the D/D for the practice.

Fifty school districts were replaced for reasons summarized in Table 2; in each case, with two exceptions, the first district on the list that had the characteristics of the dropped school was selected, unless no school remained that would allow us to meet the four sampling criteria previously listed.

We were not always successful in meeting these criteria. For example, after dropping 3 school districts in Nebraska and 4 in Virginia, we had none left on our list. As a result, at this stage, our NDN sample contained only one district each in Nebraska and Virginia. However, the number of schools with practices from high, medium, and low frequency national adoption rates was nearly equal (21, 22, and 20 respectively).

At this point, our NDN sample contained 15 schools that had adopted Title I projects, and 48 schools that had adopted practices that had been developed under other auspices (called "Non-Title I NDN" in text and tables).

Selecting Additional Title I Schools

Shortly after we had completed selecting our NDN sample, Title I program officers expressed interest in our enlarging our sample of Title I NDN sites. Five additional Title I practices were eligible (i.e., they were validated by the JDRP, funded for dissemination by the NDN, and were practices which were not already in the sample). We excluded one of them because the only schools that had adopted it were in the state in which it was developed (thus this practice had a dissemination pattern more like that of our state-administered practices than like that of our other NDN practices).

Next, we listed in random order all the school districts in our 10 sample states claimed as adoptions by the remaining 4 Title I D/Ds; there were 26 school districts on our list. We wanted to select 9 school districts (which would bring the total of Title I school districts in our sample to 24), at least 2 per

Table 2: Reasons for Dropping Sites

		NDN		BEH	State- Administered	Title IV-C Local Development	Totals by Reason for Dropping
		Initial Sample of 63	Supplemental Title I Sample				
1. REFUSAL	by Superintendent	6	0	3	0	2	11 (8.4%)
TO	by Principal	4	0	2	0	0	6 (4.6%)
PARTICIPATE	by D/D	4	0	0	0	0	4 (3.1%)
2. District discontinued use		7	0	3	3	10	23 (17.6%)
3. District personnel were aware of project but had not decided to adopt		3	7	3	3	0	16 (12.2%)
4. District personnel contacted were not aware of project		20	0	11	1	0	32 (24.4%)
5. School not in existence		0	0	5	0	0	5 (3.8%)
6. Inclusion of project would have meant 2 projects in the same district		2	0	7	0	10	19 (14.5%)
7. Project didn't require that the teacher do something different that was observable		0	0	0	2	5	7 (5.3%)

Table 2: Reasons for Dropping Sites (Continued)

	NDN		BEH	State- Administered	Title IV-C Local Development	Totals by Reason for Dropping
	Initial Sample of 63	Supplemental Title I Sample				
8. Retaining site would have led to only 1 site/project	3	1	0	0	0	4 (3.1%)
9. Other	1	0	2	0	1	4 (3.1%)
TOTALS BY PROGRAM	50	8	36	9	28	131 (100%)
Number of Sites in Final Sample	63	11	17	31	24	146

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practice. We selected school districts in order, except that whenever we took the first school district for a practice, we also took the next school district associated with the practice. Since precautionary oversampling yielded 11 sites, our final NDN sample contained $63 + 11 = 74$ sites, $15 + 11 = 26$ of which were Title I, and 48 Non-Title I.

Verifying the Additional Title I School Districts

After selecting our additional Title I school districts, we again had to telephone a contact person to verify that the practice had been adopted in at least one school building and that we had permission to collect data in the district. In the case of one practice, the first seven districts contacted claimed that no one had ever attempted to adopt the practice; at best someone in the district had reviewed some of the practice's materials. Since that particular D/D had listed only 8 school districts in our sample states, we eliminated this practice from the sample.

Selecting Bureau of Education for the Handicapped Marketing Program (BEH) Schools

We wanted a sample of 24 schools using BEH practices that met 3 constraints: at least 2 schools per practice, at least 1 school per sample state, and schools equally distributed with respect to year of adoption. We used a procedure designed to meet these constraints with a maximum of randomness; it was similar to the one we used to select our initial 63 NDN schools, except that it did not include the step of grouping project by frequency of adoption.

BEH program personnel provided us with a list of six practices which met the following criteria:

- BEH had funded development of the practice;
- BEH had LINC Resources, Inc. review the practice, suggest ways of packaging it, and distribute it to a publisher;
- The publisher had marketed the practice, and
- The practice had been on the market long enough to realistically expect to find purchasers using it.

We contacted publishers for all six practices and requested detailed information concerning purchasers' names, addresses, phone numbers, and date of receipt of the practice. Publishers for the most part provided us with copies of filled purchase orders. After eliminating purchase orders from outside our ten states and from districts which had already been selected as part of the NDN sample, we pulled our initial BEH sample.

We were unable to meet the minimum criteria for our BEH sample because we had great difficulty in locating people who claimed to

ever have used BEH practices. We found only 17 school districts that had not only purchased but also used the practice. Although we included all 17 school districts in our sample, we did not meet any of our minimum requirements. In particular, one school was the sole representative of the project it adopted; we had no BEH schools in Illinois and South Dakota; and, because the program had been in existence for only a few years, we had only 1 school that adopted in '76 and 3, 7, 2, and 1 that adopted in '77, '78, '79, and '80, respectively. (We do not have year of adoption data on 3 sites.)

Verifying BEH Schools

Major problems occurred when attempting to verify the use of BEH practices in school districts listed on purchase orders. Most purchase orders did not list the name of an individual. Often the purchaser was a school district, school building, or a shipping department. For many practices, we had to telephone district or central offices and look for someone who had heard of the practice. As a general rule we called principals in buildings housing the appropriate grade levels, special education teachers, and appropriate department heads. We followed any lead that might help us identify past or present use of the practice. Often a librarian or resource room person had purchased the practice material. Sometimes that person had lists of users of the materials, and sometimes they did not. Other times no one had ever used the purchased materials. However, whenever we received the name of a potential user of the material we attempted to locate that individual. Sometimes upon locating the individual who purchased the materials, we were told that the materials were used in a way that did not provide any services to students. In other cases, the school building that purchased the materials no longer existed.

The cumulative effect of all these problems led to a number of superintendents and/or principals refusing to participate in the study. Overall, we ended up replacing 24 BEH school districts, re-pulling the sample multiple times and never, as noted earlier, actually verifying a sample of 24 schools which could meet sampling criteria.

Selecting State-Administered Dissemination Schools

We wanted a sample of 30 schools from this program that met 3 constraints: at least 2 schools per state which had a state-administered dissemination effort, at least 2 schools per practice, and schools equally distributed with respect to year of adoption. Again we implemented a procedure similar to the one we had used to select our initial 63 NDN sites, without the step of grouping projects by frequency of adoption.

The selection of a state-administered sample was complicated by the lack of a single source of information about dissemination of practices within all ten states. Each state had its own system for funding and tracking dissemination; this meant we had to deal with ten separate state departments in order to gather the information needed for sampling. In addition, the format, detail, and accuracy of the information varied from state to state.

The initial source of information for sampling was the state Title IV-C coordinator. In our first round of telephone calls, we learned that Maryland and Maine did not have dissemination efforts which fit our criterion of transferring a practice from one school to another. All other state coordinators were asked to send descriptions of practices they had funded for dissemination, and a description of any information they had concerning adopting school districts. We eliminated any practices which did not focus on the direct delivery of services to students. The application of this criterion eliminated South Dakota from our states included in the state-administered sample.

We then requested information concerning adopting school districts from those state departments that had indicated they kept such records. Usually, these were departments which funded the implementation of new practices by providing adoption grants to interested schools. When information concerning adopting school districts was not available from the state department, we had to use an alternate procedure. In these states we selected a random set of practices. We then contacted the school district where the practice had been developed and requested information concerning adopters. We selected the initial sample of state-administered school districts from the combined set of adopter information.

Our final state-administered sample contained 31 schools, but as in our BEH sample, the distribution did not strictly fulfill our hopes. We eliminated two schools because the practice they adopted did not meet our criterion that all practices must disseminate new instructional strategies and/or materials that have impact on the classroom. Precautionary oversampling led to 1 extra school, but our 31 sites represented only 7 states. Two projects were represented by only one school. (The second sites had either discontinued use or failed to meet our criteria for an adoption.) The distribution by year of adoption turned out to be 1 in '74, 5 in '75, 1 in '76, 5 in '77, 9 in '78, and 5 '79. (We are missing year of adoption data on 6 schools.)

Verifying State-Administered School Practices

The majority of school districts contacted concerning the adoption of practices did not have to be replaced. Of the nine that did, three of these school districts would not participate because they had discontinued use of the practice.

Selecting Title IV-C Local Development Schools

Using documents furnished by Title IV-C coordinators, we listed in random order all sites that had received Development Grants in our sample states, along with the year of their funding and the name of their state. We wanted a sample that met two constraints: at least one site per sample state, and sites equally distributed with respect to year of adoption. We also wanted a total of 24 sites. Once again we followed a procedure similar to that used for our initial 63 NDN sites, except this time it was both unnecessary and impossible (because of the nature of the projects)

either to group projects by frequency of adoption or to seek more than one site per project. The 24 sites in our Title IV-C Local Development sample represents 9 states (we were unable to find any sites in South Dakota that met our criteria), and the distribution by year of adoption turned out to be 2, 8, 9, and 5 in '75, '76, '77, and '78 respectively.

The Schools We Visited

Our final sample consisted of 146 schools. Table 3 shows the distribution of these schools across the 4 programs. The table also provides information about the number of schools visited per practice, which varies from a low of 1 school (for 27 practices) to a high of 7 schools (for 1 project) and averages 2.4 schools per practice. As can be seen in the bottom row of Table 3, the average number of schools visited per practice within a program ranges from a low of 1 school (for the 24 Title IV-C Local Development practices -- recall that each of these is a one-of-a-kind venture) to a high of 4.3 schools (for the 6 NDN practices that were developed under Title I auspices).

Departing for a moment from characterizing our 146-school survey sample, we should explain that we also chose a representative sample of 12 sites for the intensive look carried out by the field study. We decided to focus only on NDN and Title IV-C Local Development sites, to enable comparison of externally-initiated versus locally-generated innovations, and were able to locate sites in all ten states that met our other sampling criterion: diversity along a series of dimensions which are outlined in Table 4. Gratifyingly, a look at the survey data collected later from these 12 sites showed us that they were quite representative, not only of other Title IV-C and NDN sites, but of the larger sample. There was a slight tendency for the field sites to be implementing larger-scale, less-clearly-defined innovations, which thus tends to throw the problems of implementation into higher relief. But otherwise the field study sample was a representative set of the sites in the survey.

Now, back to the survey sample; Table 5 shows how the 146 schools are distributed among programs by states. Note that our sample contains:

- State-Administered Dissemination sites in 6 states,
- Title I NDN sites in 7 states,
- BEH sites in 8 states,
- Title IV-C Local Development sites in 9 states, and
- Non-Title I NDN sites in 9 states.

Table 3: Distribution of Sites and Innovative Practices Among Programs

	NDH		BEH	State- Administered	Title IV-C Local Development	Total
	Non- Title I	Title I				
Number of Practices	12 (19.6%)	6 (9.8%)	6 (9.8%)	13 (21.3%)	24 (39.3%)	61 (100%)
Number of Sites	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)
Number of practices in which only 1 site was visited	0	0	1	2	24	27
Number of practices in which exactly 2 sites were visited	1	1	1	6	0	9
Number of practices in which 3 or more sites were visited	11	5	4	5	0	25
Average number of sites visited per practice	4.0	4.3	2.0	2.4	1.0	2.9

Table 4: Characteristics of Field Study Sample

Site	Program Sponsorship	Site Context		Aspects of the Innovation				
		U.S. Region	Setting	Year Began Project	Status (as initially assessed)	Program Type	Program Name or Initials**	Program Content
Astoria	NDN	Southeast	Small city	1978	Expanding	Add-on	EPSF	Early childhood
Banestown	NDN	Southeast	Rural	1979	Expanding	Pull-out	Catch-Up	Reading/Math
Burton	NDN	Midwest	Suburban	1979	Expanding	Add-on	IPLE	Law and government
Calston	NDN	Midwest	Center city	1978	Ongoing	Drop-in	Matteson 4D	Reading
Carson	IV-C	Plains	Rural	1977	Expanding	Add-on	IPA	Individualized educational planning*
Dun Hollow	IV-C	Northeast	Urban sprawl	1977	Dwindling	Add-on	Eskimo Studies	Social studies*
Lido	NDN	Northeast	Rural	1976	Dwindling	Add-on	KARE	Environment
Masepa	NDN	Plains	Rural	1978	Ongoing	Drop-in	ECRI	Language Arts*
Perry-Parkdale	NDN	Midwest	Suburban	1977	Ongoing	Sub-system	EBCE	Career Education
Plummet	IV-C	Southwest	Center city	1976	Ongoing	Sub-system	Bentley Center	Alternative school
Proville	IV-C	Southwest	Urban sprawl	1977	Dwindling	Pull-out	CEP	Vocational education
Tindale	IV-C	Midwest	Urban sprawl	1976	Ongoing	Drop-in	Tindale Reading Model	Reading

**IV-C program names are pseudonyms, to avoid identifying specific sites.

*Program is used in this site with a comprehensive sample of learners, rather than with low-achieving or marginal populations.

Table 5: Distribution of Sites Among Programs By States

	NDN		BEH	State-Administered	Title IV-C Local Development	Totals by State
	Non- Title I	Title I				
Arizona	1	1	1	0	2	5 (3.4%)
California	3	2	3	6	5	19 (13.0%)
Illinois	13	2	0	7	3	25 (17.1%)
Maine	11	0	1	0	3	15 (10.3%)
Maryland	1	1	2	0	2	6 (4.1%)
Michigan	5	13	2	7	3	30 (20.5%)
Nebraska	1	0	1	4	1	7 (4.8%)
Pennsylvania	8	5	2	3	3	21 (14.4%)
South Dakota	5	0	0	0	0	5 (3.4%)
Virginia	0	2	5	4	2	13 (8.9%)
TOTALS BY PROGRAM	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)

The number of schools visited per state ranges from 5 (in Arizona and South Dakota) to 30 (in Michigan where a high of 18 NDN sites were visited) and averages 14.6 schools visited per state. This distribution is a function of sampling parameters noted earlier, the availability of information concerning the schools in a particular state, and the state education agency's involvement with certain federal programs. We have already discussed the impact of some of these factors in the previous section.

Table 6 shows how the schools visited were distributed among programs by community type. Note that more than 53% of the sites we visited are rural, over 36% are suburban, and just 12% are urban; however, at least 50% of the BEH sites and exactly 50% of the Title IV-C Local Development sites are suburban, and fewer than 12% of the Title I NDN sites are suburban. When contrasting our sample with data from the 1980 census, we find that the rural areas are overrepresented (53% of our sites vs. 25% of the communities in the US); urban sites, on the other hand, are underrepresented (12% of our sample vs. 30% of the communities in the US).

Related to the type of community is the number of students per district. Table 7 shows how the schools visited are distributed among programs by what we consider to be a measure of district size. Note that even though the category size for each successive row is double that of its predecessor (e.g., the category size in Row 2 is 1,000 whereas in Row 3 it is 2,000), on a total sample basis, there are approximately the same number (22 + 7) of districts in each of the first 6 rows. Thus while half the districts have fewer than 3,000 students, the average district size is 8,211 students; the range is from 63 students to 128,634 students. In general, as can be seen from the top half of Table 8, the districts in the BEH sample are substantially larger than those in our other samples (and those in our Non-Title I NDN and State-Administered samples are somewhat smaller than those in our Title I NDN and Title IV-C Local Development samples).

In trying to understand our sample, it is also of interest to contrast our district sizes with information from the 1981 Digest of Educational Statistics (Fall 1979 data). We find that our school districts are larger than those across the US. Fifty-three percent of US districts have fewer than 1,000 students; only 19% of our districts were that small. At the other end our districts are also larger. Only 1% of the districts in the US have over 25,000 students; over 4% of our districts had over 32,000 enrolled.

Not unexpectedly, the differences in school size are substantial but much less dramatic than differences in district size. Table 9 shows how the sites visited are distributed among programs by the number of students per school studied. The median (416 students) is reasonably close to the mean (611 students); 70% of the schools from which we have data have between 113 students and 718 students; the standard deviation is 567 students; and the range is from 18 students to 3,092 students. In general, as can be seen

from the bottom half of Table 8, the buildings in our BEH, Title I NDN, and Title IV-C Local Development samples house more students than the buildings in our Non-Title I NDN and State-Administered samples.

Table 10 shows how the schools visited are distributed among programs by school level. Over 50% of the schools in the sample are elementary, over 25% are senior high schools, and only 13% are middle or junior high schools. While the percentage of middle or junior high schools remains about the same (14% + 6%) from program to program, the ratio of elementary to high schools varies considerably (from a high of 10.5 to 1 in Title I NDN schools to a low of .7 to 1 in the Title IV-C Local Development sites).

Table 6: Distribution of Sites Among Programs By Community Type

	NDH		BEH	State- Administered	Title IV-C Local Development	Totals by Community Type
	Non- Title I	Title I				
Urban	5	3	4	3	2	17 (11.6%)
Suburban	16	4	9	11	12	52 (35.6%)
Rural	27	19	4	17	10	77 (52.7%)
TOTALS BY PROGRAM	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)

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Table 7: Distribution of Sites Among Programs By Number of Students per District

	NDN		BEN	State- Administered	Title IV-C Local Development	Totals by District Size
	Non- Title I	Title I				
1 - 1,000	9	5	1	10	2	217 (18.5%)
1,001-2,000	15	3	1	5	4	28 (19.2%)
2,001-4,000	10	7	1	2	4	22 (16.4%)
4,001-8,000	3	5	4	3	8	23 (15.8%)
8,001-16,000	5	2	1	5	2	15 (10.3%)
16,001-32,000	4	1	4	2	4	15 (10.3%)
32,000 +	2	1	3	0	0	6 (4.1%)
Missing Data	0	2	2	4	0	8 (5.5%)
TOTALS BY PROGRAM	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)

Note that the category size for several successive rows is double that of its predecessor.

Mean: 8,211 students
Median: 2,950 students

Standard deviation: 16,149 students
Range: 63 students-128,634 students

**Table 8: Frequency Distribution Statistics for Size of District and
Size of Target School by Program**

		NDN		BEN	State- Administered	Title IV-C Local Development	Totals by State
		Non- Title I	Title I				
Number of Students in District	Range	63-42,171	480-101,501	121-128,634	160-2100	394-24,587	63-128,634
	Median	1,916	3,080	11,344	1,700	4,440	2,950
	Mean	5,701	8,664	23,778	4,634	7,070	8,211
	Standard deviation	8,875	20,617	33,702	5,698	7,177	18,149
Number of Students in Building	Range	18-2,605	180-2,942	82-1,885	55-1,899	55-3,092	18-3,092
	Median	370	454	460	376	477	416
	Mean	548	633	629	504	829	611
	Standard deviation	523	576	550	432	754	567

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Table 9: Distribution of Sites Among Programs By Number of Students per School

	NDN		BEH	State- Administered	Title IV-C Local Development	Totals by School Size
	Non- Title I	Title I				
1 - 150	4	0	2	4	1	11 (7.5%)
151-300	16	6	2	8	2	34 (23.3%)
301-450	8	6	3	7	7	31 (21.2%)
451-600	6	7	3	2	3	21 (14.4%)
601-750	3	1	2	2	3	11 (7.5%)
751+	11	6	3	6	8	34 (23.3%)
Missing Data	0	0	2	2	0	4 (2.7%)
TOTALS BY PROGRAM	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)

Mean: 611 students
Median: 416 students

Standard deviation: 567 students
Range: 18 students-3,092 students

Table 10: Distribution of Sites Among Programs by School Level

	NDN		BEH	State- Administered	Title IV-C Local Development	Totals by School Level
	Non- Title I	Title I				
Elementary School	24	21	9	20	8	82 (56.2%)
Middle or Junior High School	6	2	2	6	3	19 (13.0%)
Senior High School	16	2	5	4	11	38 (26.0%)
Other (e.g., combination)	2	1	1	1	2	7 (4.8%)
Totals by Program	48 (32.9%)	26 (17.8%)	17 (11.6%)	31 (21.2%)	24 (16.4%)	146 (100%)

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Table 11 shows how the schools visited are distributed among programs by the year in which the practice was adopted. Eighty-two percent of the sites for which we have data decided to adopt the innovation between 1976 and 1978. The average age of the Title IV-C Local Development and Non-Title I NDN adoptions is a year older than that of the BEH adoptions, and almost a year older than the average age of the Title I NDN adoptions.

Reflections on Our Sample of Schools

The general characteristics of our sample of schools provides some insights concerning the nature of schools which participated in federal and/or state supported school improvement efforts. Sample schools are equally distributed across rural and non-rural districts. However, non-rural schools are mostly suburban, rather than urban. In all programs except BEH, only 10% of the schools were in urban districts. Not only do we have fewer urban sites in our sample, but our sample underrepresents the number of urban communities that there are across the US. Though this may be a function of the sampling procedure, more likely it reflects a lack of willingness or need on the part of urban districts to get involved in state or federal school improvement efforts. Urban districts may have enough resources to solve internally the problems which cause schools to adopt new practices. On the other hand, the bureaucratic network needed to maintain a large district may make it difficult for external resources to get into the classroom. A third possibility is that large districts have the capability of attracting alternative external resources; for example, recently the New York City Board of Education has been the recipient of multiple Ford Foundation grants. Though our study does not offer a basis for choosing among these alternative explanations, it raises questions as to whom the selected programs serve, and why.

The schools in the sample cover mainly grades K through 8. A small subset of these are middle schools. We can attribute the scarcity of middle schools in the sample to the ongoing consolidation of many K-6 elementary with middle schools. Limited taxes, a shrinking population, and high energy costs have forced districts to look for ways to close school buildings; the consolidation of K-6 elementary and middle schools is one response to this need. Although the scarcity of middle schools in our sample can be explained by these contextual factors, the scarcity of secondary schools is more apt to be a function of educational policy and practice. In general, policymakers, practitioners, and academicians have focused change efforts at the elementary level. The majority of new practices have been developed at the elementary level. Most educators believe it is easier to solve problems at an early age, and developmental psychology supports this notion. However, this bias toward elementary schools as the target of improvement means that high schools, for the most part, do not participate in government-supported school improvement efforts; this fact is reflected in our sample.

Table 11: Distribution of Sites Among Programs by Year of Adoption

	NDN		BEH	State-Administered	Title IV-C Local Development	Totals by Year
	Non- Title I	Title I				
1974	0	0	0	1	0	1 (.70)
1975	3	0	0	5	2	10 (6.80)
1976	10	0	1	1	0	28 (19.20)
1977	16	11	3	5	9	44 (30.10)
1978	9	1	7	8	5	40 (27.40)
1979	2	3	2	5	0	12 (8.20)
1980	0	0	1	0	0	1 (.70)
Missing Data	0	1	3	6	0	10 (6.80)
Totals by Program	48 (32.90)	26 (17.80)	17 (11.60)	31 (21.20)	24 (16.40)	146 (1000)

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A third notable characteristic of our sample is that participating school districts are small, (although not small in contrast to districts nationwide) and the participating schools are large (even though they are mostly elementary schools). While 38% of the districts have under 2,000 students and over 50% under 4,000 students, 45% of the buildings have over 450 students. This may be caused by the large number of rural districts in our sample. Rural districts usually do not have a large population. However, the geographic dispersion of the population necessitates the transportation of a lot of students to a central location, thus creating larger schools (larger than the "neighborhood" elementary schools of less rural areas). The relationship between school size and district size and change proved important when we began to explore organizational characteristics which affected the success of school improvement efforts.

Section 5: The Sample of School District Personnel

We included five different types of school district personnel in our study. Below is a brief discussion of each of these five types of respondents:

- Teachers. The participants in the study (and throughout the report) whom we called teachers are those individuals within an identified school building who provided service directly to students through the use of the curricular or instructional practice funded by the program. Often the practice required multiple "teachers" providing different types of services to students. For example, a practice might involve a tutor, a reading specialist, and a regular classroom teacher reinforcing a set of reading skills with a student. If there were multiple types of teachers "required" in order to implement the practice, as in the previous example, we attempted to ask at least one of each type of teacher to participate in the study. When there was only one type of teacher involved in the implementation of the practice, we asked two teachers to participate in the study. In the case of the NDN practices, we asked up to six teachers to participate (often there were not six teachers involved in a given school). All participating teachers completed an interview and a questionnaire concerning their experience with the practice of concern.
- Building Faculty. Building faculty refers to any individual in a sample school building who provided any form of curricular or instructional service to a student. All building faculty completed a 10-item survey concerning the work climate in the school. Teachers who were interviewed as users of a practice also filled out this questionnaire.

- Building Administrators. In all sample school buildings we solicited the participation of the principal. Occasionally, when the principal was not available, we collected information from an assistant principal. The building administrator engaged in an interview and completed a questionnaire about his or her experience with the practice of concern and school improvement in general.
- District Administrators. In all sample school districts we solicited the participation of the superintendent. Sometimes, when the superintendent was not available we collected information from an assistant superintendent. The district administrator engaged in an interview and completed a questionnaire about his or her experience with the practice of concern and school improvement in general.
- Local Facilitators. In addition, we solicited the participation of other individuals within the district who were identified as having major responsibility for the implementation of the practice of concern. In all but one case, no more than two district facilitators from any one sample school district participated in the study. The district facilitators engaged in an interview and completed a questionnaire about their experience with the practice of concern and school improvement in general.

Selecting the School District Participants

The selection procedures for each category of participant were similar across programs. In all cases we gathered preliminary information through telephone conversations with individuals in the school building and district central office.

- Teachers: For each building, we listed all teachers in random order. In all of our NDN sites, we planned to interview all teachers up to 6. (Actually, we interviewed 7 users in 2 buildings and 8 users in 1 building.) In other programs, the number of users to be interviewed depended upon the structure of the practice. If the practice required only one teacher for the practice to be used, we planned to interview up to two teachers. If the practice required more than one teacher in order to be used, we planned to interview at least one of each role involved up to six. Given these decision rules, the sample teachers were selected in order from the list for that school.
- Building Administrators: We planned to interview every principal.
- District Administrators: In each district, we planned to interview either the superintendent or the assistant superintendent.

- Local Facilitators: In each site, the teachers were asked to name any individuals within the district, but external to the building, who had helped to implement the project. We planned to interview up to two of these persons per sample district.
- Building Faculty: In each building, we distributed building work climate questionnaires to every faculty member.

The Participating School District Personnel

Table 12 shows the distribution of participating school district and building personnel by program.

- Teachers (N = 393): Over 50% of the participants we interviewed are teachers, and 60% of these are NDN teachers. The smallest number of teachers (5.6%) interviewed is in the BEH program. This is not only because fewer BEH schools are in our sample (11.6%), but also because we interviewed fewer teachers per school (1.3).
- Building Administrators (N = 146): Except for two sites in the BEH program, we interviewed one principal in every sample building. In one of these BEH sites, we interviewed two principals (the former and present principal); in the other one: none.
- District Administrators (N = 138): We were able to interview either the superintendent or an assistant superintendent in every sample school district except one Title I NDN site, one Non-Title I NDN district, five State-Administered districts, and one Title IV-C Local Development district.
- Local Facilitators (N = 82): In over half the school districts (80), we were not able to find anyone to interview who fit the criteria of being within the district but outside of the building and of having helped to implement the project. In 35% of the districts we interviewed one such person; in 10% of the sites we interviewed two district facilitators; and in one district, at the request of the superintendent, we interviewed three of them.
- Building Faculty (N = 3,129): In the 137 sites in which completed questionnaires were returned to us, our response rate ranges from 2 to 153 questionnaires per building, with an average of 23 per building and a median of 17.

Table 12: Distribution of Respondents Among Programs

	NDN		BEH	State-Administered	Title IV-C Local Development	Participants Category
	Non-Title I	Title I				
Teachers	144 (3.0/building)	103 (4.0/building)	22 (1.3/building)	59 (1.9/building)	65 (2.7/building)	393 (51.8%)
Building Administrators	48	26	17	31	24	146 (19.2%)
District Administrators	47	25	17	26	23	138 (18.2%)
Local Facilitators	27 (in 23 districts)	21 (in 16 districts)	2 (in 2 districts)	26 (in 20 districts)	6 (in 5 districts)	82 (10.8%)
Building Faculty	1,039 (in 48 schools)	595 (in 25 schools)	368 (in 14 schools)	477 (in 29 schools)	650 (in 21 schools)	3,129
Total Participants by Program	1,305 (33.6%)	770 (19.8%)	426 (11.0%)	619 (15.9%)	768 (19.8%)	3,888 (100%)

Section 6: Reflections on the Sampling of Local Schools

Before proceeding to additional components of our sample and sampling procedures, we pause to reflect on how our original plans fared as they met the real world of schools, and the implications of those interactions for this study as a whole. In particular, we discuss the problems of reporting accuracy and sample bias.

Accuracy of Reporting on Adoptions

If we divide the number of schools in our final sample by a denominator equal to the numerator plus (1) the number of schools in which district personnel were aware of the project but had not decided to adopt, plus (2) the number of sites in which the district personnel we contacted were not aware of the project, plus (3) the number of schools listed which we could not locate, we can compute an index of reporting accuracy for the federal and state programs. (Note that the data for such calculations can be obtained from Tables 2 and 3.) The reporting accuracy index for all programs combined is 73.4%, which on balance, is reasonably high. However, as one might expect, this index differs markedly from program to program.

BEH has the lowest index (47.2%), presumably, because the publisher's records show purchases rather than adoptions. We did not consider a school an adoption merely because somewhere in the district a set of materials lay on somebody's shelf.

Next in ascending order comes the NDN (71.1%) in which D/Ds vary with respect to what they call an adoption (some listed schools that were represented in awareness sessions; others adhered to stricter criteria). Since NDN program officers have been concerned about this problem and have tried to standardize the definition of an adoption, the more recent records are probably more accurate than those that go back several years.

The state-administered programs have the highest reporting accuracy index (88%) of the 3 dissemination programs, probably because the geographical and psychological distance is smaller between developer of the practice and adopters, thereby permitting greater communication between them.

Of all the programs we studied, the Title IV-C Local Development program had the highest reporting index (100%). On the one hand, this is not too surprising, since rather than being an adopter, each district had applied for and received funds to launch its own project. On the other hand, the index is higher than one might expect, given the earlier Rand Corporation study finding that districts sometimes applied for IV-C grants without ever intending to use the money to implement the proposal (Berman & McLaughlin, 1975).

This range in reporting accuracy has implications for federal and state program offices who are concerned about the impact of their school improvement strategies. How many schools are really being reached by their programs? Should they be satisfied with attendance at awareness conferences, purchase of materials, or are actual adoption and use their goals? As noted earlier, the NDN Division has dealt with this issue, resulting in tighter definitions of adoptions and more systematic, standardized reporting procedures. But there, and in other programs, the issue remains.

Another issue in accuracy of reporting concerns the durability of adoptions. We wanted to study practices that had been adopted primarily during the academic years '76-'77 through '78-'79. The data we collected suggest that some of the original information with respect to year of adoption was inaccurate. For example, the distribution of our final NDN sample, which we selected to be evenly distributed by year of adoption, was 3 in '75, 18 in '76, 27 in '77, 20 in '78, and 5 in '79. (We are missing year of adoption data in 1 site.)

Our sampling was based on year of adoption figures given to us by developers, publishers, or state officials, but our on-site data collection activities revealed that sometimes those initial figures were inaccurate. The inaccuracy resulted in our studying longer-lasting projects than we intended; 28 projects in our sample were 3 years old, 10 were 4 years old, and 1 was 5 years old. Furthermore, of the 270 sites that were sampled (146 used in our sample and 124 dropped), only 23 (or 8.5%) were coded as being dropped because the district had discontinued use.

We believe that this serendipitous finding reflects well on the issue of program "stick." It is one thing to discover that a sizable percentage of a sample pulled from program records were not using a new practice because either they never intended to or decided against adoption. This reflects a problem in record-keeping. It is quite another situation when a relatively large number of those schools who did adopt and use a new practice, are still using it. Thus we found that once a school was committed to a new practice, its "durability" is remarkable: in 91.5% of these schools, the practice was still being used, and in many cases, had been for several years.

Sample Bias

Referring back now to Table 2, which reflects the relative success of our sampling efforts, we must note some opportunities for bias in our findings due to sample composition. Our original intent was to study schools where school improvement efforts, stimulated by our selected federal and state programs, were actually occurring. We were not in the business of studying "non-events" (i.e., non-use of the practices). Thus, sites that had

discontinued use were eliminated (reason #2 on Table 2). This particular bias, therefore, was purposely built into the sample.¹⁸

This sampling procedure may have led, however, to some unintentional but understandable (and, we believe, unavoidable) biases in the sample. First, the sample could possibly be biased towards successful projects. The refusal by school and project staffs not to participate in the study (reason #1 on Table 2) may reflect a lack of success by projects in their sites. The 21 sites (16.9%) who refused to participate represent a sizable number (although, we might also note, many reasons other than lack of success could have prompted such refusal). Second, the decision to drop sites because they were already implementing a practice on which we were focusing (reason #6) may bias the sample towards less innovative districts. Eliminating 7 sites because they professed not to have changed as a result of implementing the new practice (reason #7) introduces a slight bias towards "bigger" innovations. Finally, another slight bias may result from dropping sites when inclusion would have meant there would be only one site per project (reason #8). This elimination, coupled with the selection criteria of practices needing to have more than one site in our ten states, biases the sample towards practices with higher frequencies of adoption.

It is clear that our sample is quite different than it would have been than if we had included all sites selected, regardless of professed use or disinclination to participate. However, because the study was focused on what is happening in schools where school improvement efforts live -- and was dependent on entering the everyday world of school people (thus subject to their willingness to be involved) -- our sample ended up as reported. We qualify our findings accordingly.

¹⁸Note, however, that such selection did not guarantee that use of practices was actually happening in classrooms, since we selected sites on the word of a contact person. Previous studies have found such reports often erroneous (Charters & Jones, 1973). Nor did it guarantee any particular degree of robustness or fidelity of use. The extent of these remained empirical questions.

Section 7: The Sample of External Facilitators

In programs that we chose to examine, a potentially large group of individuals existed who might have provided significant help to school district and building personnel involved with the implementation of particular practices. In fact, in the NDN and State-Administered programs, the respective government offices had funded groups of individuals to help schools implement these practices. In order to get a complete picture of the factors that affected the implementation of specific practice in our sample schools, we solicited the participation of those individuals external to the sample local school districts who facilitated and/or were funded to facilitate the implementation of practices. Two major categories of external facilitators participated in the study:

- 1) Funded External Facilitators. These are individuals who were formally and specifically funded by the program office to facilitate the implementation of practices in school districts. Not all individuals on funded facilitator staffs, nor all funded facilitator projects, worked with local school sample participants on the adoption and/or implementation of the practice of concern. However, whenever a funded facilitator was identified as having worked with a sample school district, that SF, D/D, or State-Administered program developer completed an interview and questionnaire concerning his or her work with the school. He or she also completed a second interview and questionnaire about his or her work in general. If an individual worked with more than one sample school district, that SF, D/D or State-Administered program developer completed an interview and questionnaire for each district, up to a maximum of three districts. Project directors, whether or not they had worked with a school in the study sample, completed an interview and questionnaire about their job in general.

The role groups of funded external facilitators included:

- Developers of the Practice. The developers of the practices are funded by the NDN for NDN practices (including Title I), and by state departments of education for the state-administered Title IV-C practices to facilitate their adoption. The developers' major methods of facilitation are to demonstrate specific practices and train practitioners in their use. Developers for the NDN, including Title I practices, are called Developer/Demonstrators (D/Ds). State-Administered program developers have no formal title.
- State Facilitators. The NDN has funded at least one project per state whose task is to facilitate the adoption of NDN practices by local schools within that state. State Facilitators accomplish this task by monitoring the needs of schools within their state, making schools aware of NDN practices which might serve their needs, creating

linkages between D/Ds and appropriate schools and providing follow-up services to local schools once they have received training in these practices.

- 2) Non-funded Facilitators. Non-funded facilitators are individuals who help local school personnel with the adoption or implementation of a practice; however, they are not funded directly by the program (NDN, Title I, Title IV-C or State Administered) to do so. Non-funded facilitators identified by sample local school participants completed a questionnaire and interview concerning his or her work with the sample school. In addition, each completed a questionnaire and interview concerning his or her work in general. (In the analysis of data, however, external facilitators were grouped by the program with which they worked, regardless of whether they were funded or non-funded facilitators.)

Selecting External Facilitators

Participants for the external facilitator sample included any facilitator we could locate who helped a sample school district with a practice.

Once a sample of school districts had been randomly chosen from the pool of adopters of particular new practices within our ten sample states, study staff telephoned a contact person in each school system who had been identified by the developer. In the course of these telephone conversations, school personnel were asked if anyone had helped them adopt or develop the innovations in question. The names, and where possible, addresses and telephone numbers of nominees, were collected. In some cases, the district contacts who had been involved in the early stages of acquisition and implementation of a practice had moved on, and no identifications were possible. In others, the recalled information turned out to be fragmentary or even incorrect.

Table 13 gives information on the number of participants we identified and the number interviewed for the four federal programs.

Table 13: Number of External Facilitators Identified and Interviewed for Four Programs

	<u>Number Identified</u>	<u>Number Interviewed</u>
<u>External Facilitators:</u>	<u>124</u>	<u>96</u>
National Diffusion Network: State Facilitators	16	15
National Diffusion Network: Developer/Demonstrators	36	29
National Diffusion Network: Title I Developer/Demonstrators	23	22
Title IV-C Development Projects	24	12
State-Administered Dissemination Programs	22	17
Bureau of Education for the Handicapped Marketing Program	3	1

Reasons for Not Interviewing External Facilitators:

More Than Two Per Site/Not Necessary for Information on Site:	17 Nominees
Could Not Be Located:	3
Identified Too Late to be Interviewed:	4
Refused:	2
Determined to be Inappropriate:	<u>2</u>
	28 Nominees

The External Facilitators We Included

The final facilitator sample consists of 96 participants. Of the total facilitators, 90 participants completed interviews on their work in general, and 88 completed questionnaires. Eighty participants completed a total of 132 interviews and 132 questionnaires about work with sample schools. The number of schools per external facilitator ranges from 1 to 5; the average per respondent is 1.6. Of the 96 facilitators, 16 had not worked with any sample school. In all, we have 72 complete sets of external facilitator data, consisting of 1 general interview and questionnaire and at least 1 school-specific interview and questionnaire.

Table 14 presents a breakdown for the four federal programs in the study of the number of schools for which facilitators were identified, the number of schools for which facilitators were interviewed, as well as the number of schools for which we have no data, either because no facilitators were identified or because data could not be collected.

Section 8: Learnings From Sampling

In addition to the characteristics of schools and results we have presented thus far, our sampling experience leads us to three notable learnings:

- There is great variability across states in their attitudes toward dissemination and federal efforts, and their attitudes affect the type of school improvement efforts within local schools.
- The existence of a facilitator who engages in face-to-face contact with school personnel increases the likelihood of teachers using an adopted practice over time.
- There is a remarkable amount of activity in schools that has been stimulated by state and federal programs.

We found great variability in the attitudes of state departments toward dissemination and federal efforts. Some states do not like participating in federal dissemination or other efforts; nor do they view the disseminating of practices as a viable function for the state department. Other state departments see dissemination as simply sharing information with schools; these states leave practice transfer to the federal government. A third group of states see each individual program as providing its own version of dissemination. Still a fourth group of state departments see their role as providing an integrated state-administered dissemination network through which all state and federally validated practices flow to local schools. What we found in local schools depended to a large degree upon the position the state department took on these issues.¹⁹

Another learning involved the BEH Marketing Program, an example of the Commercial Distribution Strategy for supporting school improvement. In this program, where no face-to-face contact with school personnel occurred, we had extreme sampling problems. We discovered that the purchase of materials did not mean the use of materials. Working from purchase orders, we spent endless

¹⁹For a fuller discussion of state roles in dissemination, see Cox and Thompson (1982).

Table 14: Number of Schools for Which External Facilitators Were Identified for Four Programs

	Total # of Schools in Study	Total # of Schools with External Facilitator Participants	Total # of Schools with no External Facilitator Identified	Total # of Schools with no External Facilitator Data
National Diffusion Network	48	42	0	4
National Diffusion Network: Title I	26	24	0	2
Title IV-C Local Development	24	9	14	1
State-Administered Dissemination Programs	31	20	3*	8
Bureau of Education for the Handicapped Marketing Program	17	0	16	1
TOTAL	146	97	33	16

*includes one misidentification (see text)

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time and long distance phone calls trying to find anybody who used the materials that had been purchased. If (and only if) use of materials by schools is a program goal, we suggest rethinking this particular strategy.

Finally, we believe we can report a different picture of schools involved in federally-supported improvement efforts than the dismal one painted by Rand Corporation findings in the middle and late 1970s. Using lists of adoptions that were as much as five years old, we found that a large majority of the schools listed which had actually adopted the new practices were in fact still using them. Less than ten percent reported discontinuing use. This finding needs to be considered in light of the federal investment made, but it does in fact indicate payoff from that investment in many schools spread across the country.

CHAPTER IV: METHODOLOGY

Section 1: Introduction

This chapter describes the methodology used in our study. Section 2 provides a general description of the research design, while Section 3 provides a general description of the major data collection efforts:

- local school
- external facilitator
- state and federal.

For each data collection effort, we provide a detailed description of any nontraditional data collection techniques we used. These include:

- content analysis
- Practice Profiles
- Levels of Use.

Section 4 describes our data analysis.

Section 2: The Research Design

Chapters 1 through 3 provide background information that, when integrated, informed the general research design of this study. Aspects of the design were a result of:

- our interpretation of the RFP,
- negotiations with the project officer, and/or
- our conceptual work.

Below is a list of the aspects of our design that were decided prior to sampling:

- The study looked at government-sponsored school improvement efforts, the vast majority of which involved dissemination.
- We gathered data on both state and federal dissemination efforts.
- Within the category of federal school improvement strategies we looked at efforts involving both dissemination and local development; we only examined state efforts which involved dissemination.
- These school improvement effort categories were represented in our study of local schools by the following programs: NDN (including Title I), BEH Marketing Program, State-Administered Dissemination, and Title IV-C Local Development.

After these decisions were made, we selected our key sample element, the school district. Sampling of school districts was done independently for each program, and stratified by state in which the district was located. The selection of school districts determined the sample of practices which would be in the study, as well as the sample of participants. The choice of school district (and within it, an individual school) as the key element in the design was conscious and critical. This choice reflected the assumption that the nature and activities of local schools are the most critical element in the dissemination process. Therefore it was important that our sample represent the variations in schools. Table 15 illustrates how elements of our design relate to one another, those that informed sampling, and those that resulted from it.

More concisely, we have a nested hierarchical research design of classrooms within schools, schools within districts, and districts within states. Schools are the basic sampling unit, with teachers, principals, local facilitators, and external facilitators serving as informants about them.

Before proceeding with our description of how we collected and analyzed data, two final aspects of our design should be noted. First, all respondents in our design are linked together by participation in a common process. We collected data from teachers who implemented the practice, developed by the developers we interviewed. The local and external facilitators we interviewed described what they did with, and said to, the actual teachers we interviewed. The administrators we interviewed worked with these teachers. This common participation across respondents is true across our total design. As a result, our data base affords the opportunity of recreating the process of implementation from the unique perspectives of each participant; we could examine the congruencies and incongruencies across these various perspectives. Although our design and data allow for such exploration, we have not completed this analysis due to limited resources. A second aspect of the design worth noting is that, although our research design is not complex, the data provided by such a hierarchically-nested design produce numerous analysis problems. In Section 4 of this chapter, we describe our analysis procedures.

Table 15: How Components of Our Design Relate to One Another

ASPECTS OF THE DESIGN DECIDED BEFORE SAMPLING	GOVERNMENT-SPONSORED SCHOOL IMPROVEMENT EFFORTS				
	DISSEMINATION			NO	
	FEDERAL		STATE		DISSEMINATION
	INTERPERSONAL LINKAGE		COMMERCIAL DISTRIBUTION	STATE	TITLE IVC
	NATIONAL DIFFUSION NETWORK		BEH	TITLE IVC	TITLE IVC
	OTHER NDN	TITLE I			
KEY SAMPLE ELEMENT	SCHOOL DISTRICTS	SCHOOL DISTRICTS	SCHOOL DISTRICTS	SCHOOL DISTRICTS	SCHOOL DISTRICTS
PRACTICE A - EXTERNAL FACILITATORS					
ASPECTS OF OUR DESIGN DEPENDENT UPON THE RESULTS OF SAMPLING	SCHOOL DISTRICT A - SUPERINTENDENT A		SCHOOL DISTRICT B - SUPERINTEDENT B		
	LOCAL FACILITATOR A		LOCAL FACILITATOR B		
	TYPICAL SCHOOL 1 - PRINCIPAL 1		TYPICAL SCHOOL 2 - PRINCIPAL 2		
	TEACHER 1A	TEACHER 1B	TEACHER 2A	TEACHER 2B	

Section 3: Data Collection Methods

Collecting Data for Different Study Components

Separate instrumentation and data collection activities were mounted for three categories of respondents:

- federal and state government personnel,
- external facilitators, and
- local school district personnel.

Early in the history of our study, instrumentation for each group was developed by the staff who managed the data collection for the respective participants. Staff at The NETWORK developed protocols for collecting data at the state and federal level. External facilitator instrumentation was developed at American University. Instruments for the survey component of the work in local schools was developed collaboratively by staff from The NETWORK and the Texas R&D Center for Teacher Education. Finally, staff at the Center for Policy Research designed data collection procedures for the field study of local schools. After development was completed, four corresponding teams of field researchers were hired.

Collecting Data From Federal and State Personnel

One set of field researchers conducted loosely structured interviews with federal personnel for the NDN, Title I, BEH, and Title IV-C programs. Simultaneously a second set of field researchers interviewed state department of education personnel in the ten sample states. In both cases, field researchers interviewed respondents concerning the context, program operations, policies, goals, and assumptions of their work. Interviews were loosely structured, with field researchers using a topic guide to focus the conversation. Below are the general categories found in the topic guides:

- goals,
- program or state department history,
- organizational structure and environment,
- federal-state relationships,
- sources of practices disseminated,
- selection of practices for dissemination,
- vehicles for disseminating practices,
- support systems provided to or available to the dissemination process,
- relationship to the implementation at the local level,
- relationships with other dissemination activities,
- evaluation and research, and
- core assumptions.

Based on the interview, federal program profiles were completed along with a description of the relationship between state and federal effort in the area of dissemination. Key ideas from these works were summarized in previous sections of this volume. [See Cox and Thompson (1982), Shive and Eiseman (1982), and Thompson (1982) for greater detail.]

Collecting Data From Other Participants: Survey Component

Although different teams of field researchers collected survey data from local school personnel and external facilitators, the methods used to gather data were similar. All major categories of participants received an interview and a corresponding questionnaire. In each case the focus of the instrumentation fit the role of the participant. Table 16 lists the participants, the instruments they completed, and the type of information gathered in the instruments. In addition to conducting interviews and administering questionnaires, field researchers filled in demographic information sheets on each school building, school district, and external facilitator.

In order to increase the likelihood of gathering concrete, valid data using these survey methods (i.e., interview and questionnaire), we employed three special data collection and analysis procedures: content analysis, Practice Profiles, and Levels of Use. The conceptual underpinnings and details of these methodologies are described in greater detail in the next section, Special Data Collection and Analysis Procedures.

In order to create a large number of the variables analyzed in this study, we combined items from interviews and/or questionnaires. These derivations are based on preliminary factor analyses of sets of items, or the conceptual definition upon which the item was based.

Collecting Data from Other Participants: Field Study Component

The field study staff collected data from each of the 12 sites through a series of 2 to 3-day visits, typically 3 or 4 visits spaced over the school year from December through May. During the visits, field workers carried out many informal interviews with local users, administrators, and external facilitators, in addition to a semi-structured interview covering the main research questions. They observed many classroom, school, and meeting settings; collected documents of all sorts; and reviewed the individual survey responses of personnel in the site. Each field worker took thorough field notes, then dictated a full account of all events during the site visit, based on the field notes, for transcription and coding. Notes and transcribed accounts of interim telephone conversations also were made.

As a rough indication of scale, the data base of written-up accounts totaled 2,713 single-spaced pages, or an average of 226 pages per site.

Table 16: Description of Instrumentation by Participant Role

Role	Instrument	Information Sought
Practice Developer	Practice Profile Interview	A detailed description of the nature and use of the practice, including ideal, acceptable and unacceptable variations; other attributes such as purpose, implementation requirements, pedagogical approach.
Teachers	Teacher Interview Teacher Questionnaire	A detailed description of the teacher's experience with and use of the practice; including what they were doing with the practice; why did they try to use the practice; what kind of assistance did they get in the practice, who provided this assistance; and what are the positive and negative aspects of the practice?
Building and District Administrators	Administrator Interview Administrator Questionnaire	A detailed description of their knowledge and experience with the practice; what is their evaluation of the practice; what are their plans for the practice; what is their role in terms of school improvement in general; what has their experience been with school improvement?
Local Facilitators	Local Facilitator Interview Local Facilitator Questionnaire	A detailed description of their role in implementation of the practice; what is the attitude toward the practice; what other things do they do in the district; what is their overall relationship to school improvement efforts?

Table 16: Description of Instrumentation by Participant Role
(continued)

Role	Instrument	Information Sought
External Facilitators (total sample)	General External Facilitator Interview General External Facilitator Questionnaire	A description of the facilitators' work place, job, clients, strategies for school improvement, available resources and attitudes toward work.
External Facilitator (those who helped sample schools)	School Specific External Facilitator Interview School Specific External Facilitator Questionnaire	A description of the nature of contact with anyone in the local local school; the facilitator's description of the practice and how long it is being used in the school; the types of assistance the facilitator gave to local school personnel trying to use the practice; the facilitator's attitude toward the practice and its use in that particular school.
Building Faculty	Building Work Climate Questionnaire	A general description of the work climate in the school; do teachers get along; how does the faculty view the principal; how do problems get solved; who makes the decisions?

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Special Survey Data Collection and Analysis Procedures

In this section we discuss the three procedures that we combined, adapted, and elaborated upon to develop the interviews for use with local site and external facilitator survey participants.

Content Analysis

This description of content analysis includes discussions of:

- the definition of content analysis,
- its purpose in this study,
- the rationale for the procedures we used,
- the inferences that can be derived from the content analysis data,
- coding operations used,
- the issue of reliability, and
- sample text and a sample coding format.

What is Content Analysis? Content analysis refers to research methodologies which analyze the language of a text or interview for the purpose of making inferences about attitudes of the author or interviewee. There are two major types of content analysis referred to in the literature: manifest and latent.

Berelson (1952) defined content analysis as the operationalization of a variable through frequency counts of manifest content relevant to an object or property in the sample. In simple terms, manifest content is the number of times a concept appears in text. For example, Wilbur Schramm used manifest content analysis techniques to determine the newsworthiness of various countries through the world, and hence, their relative importance. His measure was the number of column inches of stories about each country in 20 daily newspapers.

A cursory review of the content analysis literature indicates the analysis of manifest content accounts for the largest percentages of studies using content analysis. One reason for this is that manifest content analysis is methodologically and conceptually easy to do, since coders do not have to make inferences; all they do is count. In our study, manifest content offers a way of exploring how people describe themselves in relation to an innovation. For example, we might ask a teacher, "What are the things that you are satisfied with about the practice you adopted?" A measure of satisfaction, using the manifest technique, is to count the number of things that satisfy the teacher. However, this traditional method has one fundamental problem. Repetition is not necessarily the same thing as intensity, and coders have great difficulty following texts and seeking out illustrative manifest content.

The second type of content analysis, latent analysis, has been defined as "the use of replicable and valid methods for making inferences from texts to other states or properties of its source" (Krippendorff, 1969, p.103). Here the researcher goes beyond identifying manifest content; he or she makes inferences about the internal states of the respondent. Studies describing manifest content do not go beyond inferences based on the rate of appearances or frequencies of words. Studies of latent content structure use descriptions of manifest content in a message as a springboard for drawing conclusions about the underlying meaning (connotative content) of a message. Carney (1972) calls this "reading between the lines." For example, imagine a teacher in our sample who listed a large number of ways in which the practice satisfied her or him. Using a manifest context analysis, we would report this teacher as having a high satisfaction score. If we used a latent content analysis technique, we might infer that this teacher was very likely to adopt another new practice, given the opportunity.

Why Use Content Analysis? Content analysis has been used for two main reasons:

- it avoids the biasing in self-report attitude scales and systematically reduces a morass of data,
- it avoids the artificiality of paper and pencil questionnaires, which often prove counter-productive to a stated research purpose.

These reasons specifically apply to our study. We were interested in a method for collapsing a morass of interview data to manageable proportions. We also wanted to increase reliability and validity of our data by avoiding the restrictions of paper and pencil tests. Finally, we believed that especially when asking people to describe their feelings and attitudes, open-ended interviews convey a fullness of the human experience not easily tapped by other research methods. Content analysis offered the option of allowing participants to describe their attitudes in their own language without losing comparability of data across individuals.

Our Use of Content Analysis. The method we used for this study is based on classical contingency analysis. The technique we used, classification analysis, has the following major characteristics:

- a conversion of manifest to latent content procedure,
- an ability to apply a rule for the conversion of content to a metric,
- the ability to make assumptions about the structure of the source,
- the ability to make inferences about the source,

- the ability to measure the direction of attitudes represented in content,
- a simple coding process,
- a method for controlling potential coder bias,
- a method for assuring reasonable agreement among coders about common meaning terms,
- (and most importantly) an unambiguous method for discriminating subjects according to a continuum.

The basic assumption of classification analysis is that we can correctly measure subjects by counting the number of different references they make about a particular attitude object. That is, the number of different reasons a person gives for being satisfied can be added to form an index of how satisfied he or she is. In this view, a person who provides nine reasons for being satisfied is more satisfied than a person who provides one reason for being satisfied.

In the biological sciences, numerical classification analysis is used to measure both the appropriate taxonomic classification of an organism, and the ecological variation of a site. In the latter case, individuals can be arrayed by attributes (characteristics) of a category to measure the extent to which a higher order category is appropriate for describing individuals. If the attributes are derivable from the higher category, then the more attributes, the more the category applies. For our purposes, the categories are variables, and attributes are traits of the variable.

For example, consider the variable, "satisfaction with work." The variable can be broken down into a set of traits which are representations of that variable in real life. A person describing how satisfied he or she is might say, "I find I don't complain about my work like I used to." This statement is a representation of a trait which indicates the variable, "satisfaction." In the method we used, a linguistically equivalent statement was provided as a referent for the variable on a coding sheet. The coder entered a value in a box indicating that for this individual, this trait held. Each variable had a number of such traits and the traits were cumulative. That is, the sum of the traits equaled the scores of the individual on the variable, "satisfaction."

This seems like fairly straightforward contingency content analysis, with the possible exception that codes are binary. However, by structuring the data in matrices of variables by individuals by attributes, we gained benefit from the statistics that have been developed within the biological sciences for classifying and describing individuals. We not only get an estimate of magnitude, but because each person is classified

according to the same characteristics, we can estimate the extent to which the individual is different from a model individual in the system, an average individual in the system, and any other individual in the system. In this sense, system is taken as the matrix of values.

In general the codes were dichotomous to increase the reliability of coder judgments. No coder was asked to estimate the intensity, but merely the presence or absence of a particular trait. Thus the judgment about each trait or attribute was identical, and so the errors of coding were likely to be distributed randomly.

If a respondent mentioned a trait of a variable once or twice, the coder marked 1 for that trait. If a respondent did not mention a trait, the coder marked 0. In rare cases where a respondent mentioned a trait three or more times, the coder marked a + for that trait.

How Classification Analysis Worked For Us. There were four main activities associated with producing these classification content scales:

- Identification: We labeled the variable and developed a preliminary list of attributes.
- Collection of Data: We developed appropriate questioning techniques for ascertaining lists of attributes and trained field researchers in the use of these techniques.
- Coding: We developed final attribute lists, trained coders, developed dictionaries, and coded data.
- Data Analysis: We created variables from attribute scores.

In order to clarify classification analysis, we describe each of these steps using as an example the concept of benefits accruing to the teacher as a result of using a new practice.

Identification: We decided to use content analysis to measure concepts which were "opinions" or "feelings," rather than descriptions or observations which were factual in nature. We further decided to measure these concepts using an interview. Initially we divided all our interview variables into two categories: content analysis variables and others. We then needed to verify that the content analysis variables were appropriate for use of that methodology, develop the questions for measuring the attributes of the variables, and get a sense of what the attributes of the variables were.

We took the list of content analysis variables and conducted a set of pilot interviews. Each pilot interview contained no more than six content analysis variables. Interviewees were asked to describe aspects of the variable being explored. The interviewers, who at this point in the process were senior staff members, asked the respondents about the variable in as many different ways as possible.

Using our example variable of "benefits of using the practice," we asked a teacher:

What do you like about the practice?
Did you see any positive changes after using the practice?
Did anyone make any positive comments to you about the practice?

Pilot interviews were then transcribed and examined for

- language used to describe the content analysis variable, and
- traits which seemed to equal that concept for the respondent.

Based on the analysis of the pilot transcript we chose the final list of content analysis variables, formulated interview questions for measuring each variable, and developed a preliminary list of variable traits. For example, the two questions used to evoke responses for the variable of "teacher benefits" were:

- What are the strengths of (name of practice)? and
- What gains or benefits resulted from using (name of practice)?

A preliminary list of traits for this variable was:

1. improved academic performance
2. improved behavior
3. better attitudes towards school work
4. better attitudes toward school
5. easier to teach
6. work more satisfying
7. better attitudes (outlook)
8. better teacher/student relations
9. better work/task environment
10. more communication with parents

The content analysis variable questions then were integrated with others to form a coherent interview.

Collection of Data: Once the final interviews were developed, we trained field researchers to conduct them. Each field researcher received an interview protocol upon which content analysis variable questions were noted. Field researchers memorized the protocol and learned an appropriate probing technique. First the interviewer would ask the question in the protocol verbatim. If the respondent listed some attributes, the field researcher simply let him or her finish the list and then probed with, "Anything else?" This "anything else" probe was used on the average of two more times, or until the respondent seemed to have said all there was to say about the variable, or said, "no, nothing else." If the respondent did not list attributes or began to digress onto another topic, the interviewer restated the question, using a semantic equivalent of the variable and asking the respondent for a list.

For example, in the case of the benefit questions the interviewer might restate the question as follows:

Well, could you list the things you liked about the practice?

Once the respondent gave an answer which indicated that he or she understood the question, the field researcher reverted to the "anything else?" probes. Field researchers were instructed never to give examples or answers to the respondent, nor to repeat the respondent's words, paraphrase the respondent's answers, cut the respondent off, or lead the respondent to give particular answers in any other way. If the interviewer did not understand a particular answer, he or she simply asked the respondent, "What do you mean by that?"

Coding: After all interviews were complete, field researchers helped develop the final coding sheet for each content analysis variable. First, a field researcher listened to a random sample of 10-20 interviews for each respondent type. The field researcher wrote down verbatim the attributes used to describe each content analysis variable in each interview. The attributes that were identical were then tallied. Finally, attributes that were judged to be semantically equal were collapsed into a single attribute and tallied. For each variable, this resulted in from 1 to 12 attributes. These attributes were listed on a coding sheet, with three blank spaces for the addition of new attributes.

We then developed dictionaries that defined each attribute and gave examples of interview responses that would equal the attribute.

Coders then listened to tapes with the interview coding sheets in front of them. For each variable, they marked any attribute with a 1 if mentioned once, and a + if mentioned 3 or more times. Attributes which were not in the dictionary were coded in the "other" category and tracked throughout the coding process. If an "other" attribute occurred across a large number of respondents, it became a permanent attribute and was added to the dictionary.

Data Analysis: Since data were coded 0, 1, 2 (2 = +) for each attribute, matrices were entered into the computer for each respondent. A set of codes was established that reflected the number of attributes for each variable for each subject. The space was reserved in the computer record of each subject for a complete list of attributes. Thus, a subject for a variable with ten attributes might be coded:

1 0 0 1 2 1 1 0 0 1

This sequence was entered into the computer. The machine then calculated the transformed values of these data.

Depending upon the nature of the distribution of the residuals, the nature of the distribution of ones and zeroes, the size and normality of distribution as a whole, and other features of the data itself, the data underwent transformation. The most obvious transformation was summing the attributes for each variable, to produce a magnitude for the variables.

Practice Profiles

A key objective of the study was to explore how teachers use new practices in the classroom, and what influences variations of their use of the practices. In order to meet this goal, we needed to describe the practices in a standardized format that allowed for both comparisons across, and generalizations about, use of the practices. In this section, we describe the standardized format we chose: the "Practice Profile." We discuss what Practice Profiles are, how they were developed, and how they were used in the study.

Practice Profiles: Definition

In this study we looked at 61 different practices. For each, a Practice Profile was developed to (1) describe particular characteristics that we believed might influence the school improvement process or its outcomes (e.g., complexity, implementation requirements), and (2) depict the practice itself in terms of its operational components. We describe these two parts below.

Practice Characteristics. We characterized each of the practices by its:

- Purpose -- either the intended use or what the practice was designed to accomplish,
- Pedagogical Approach -- the psychological or philosophical principle or technique underlying the practice,
- Complexity -- the number of things (e.g., time, materials, classroom organization, roles to coordinate) that the primary user had to take into account in order to implement the practice,
- Implementation Requirements -- those items and arrangements necessary to implement the practice (e.g., user skills, money, materials and equipment, personnel, training, organizational arrangements),
- Size -- an estimate of the scope and magnitude of the demands placed on both the teacher and the institution by the practice,
- Prescriptiveness -- the extent to which the developer restricts the discretion of the teacher with respect to implementing the required components of the practice,

- Precision of Definition -- the concreteness or clarity of the requirements for utilizing the components of the practice, and
- Concreteness of Claimed Benefits -- how observable or measurable the benefits are that the developer claims would be accrued from implementing the practice.

Methods for developing ratings of these characteristics are described shortly.

Practice Components. In order to describe the use of the new practices by teachers, we needed to describe each one carefully in terms of possible use. We used as a starting point the concept of Innovation Configurations developed at the Texas Research and Development Center for Teacher Education (Hall & Loucks, 1978). This concept emphasizes the systematic and operational definition of a practice by delineating its key parts or components, and describing various ways the components might be used in actual practice. A component, for example, may be a certain teaching strategy, a procedure for grouping students, or a system for record keeping.

One means of profiling the components of a practice is through the use of a checklist that lists components and their possible variations. For the study, a format was developed for the Component Checklist that not only depicted how the practice might look in a classroom, but also allowed judgments to be made about how close that use was to the developer's picture of how the innovation should look.

Figure 11 is one such checklist. Note that for each of the practice components, variations are described that are either ideal, acceptable, or unacceptable to the developer.

For the purposes of the study, components were defined as key features of the practice that represent actual behaviors of teachers and their students. Each component could conceivably stand alone, i.e., be used without other components. (Using only one component would clearly not be acceptable to a developer; the ability to stand alone is used here only in an effort to describe the nature of a component.)

It is often easier to describe what a component is not than what it is. A component is not an implementation requirement (defined above as a practice characteristic); i.e., a separate building, a kind teacher, a two-day training session are not components, because they do not describe what the practice looks like when it is in use. Teacher knowledge or skill is not a component; rather, the component is what those abilities look like when they are used (e.g., actual use of a diagnostic test rather than knowing how to give it).

FIGURE 11: Example of a Component Checklist

STATE _____ CITY _____ DISTRICT _____ BUILDING _____ ID# _____ CONFIG _____

COMPONENT CHECKLIST FOR STRATEGIES IN EARLY CHILDHOOD EDUCATION

<u>Component 1: Screening</u> (1) Early Childhood Assessment Instrument given to each child in classroom	(2) Early Childhood Assessment Instrument given to each child in classroom, with some activities substituted, but objectives remain same	(3) Instrument other than Early Childhood Assessment Instrument given or no assessment given at all
<u>Component 2: Selection of Instructional Activities</u> (1) Activities used for each child's daily instruction based on child's assessed level	(2) A majority, but not all of each child's instructional activity based on child's assessed level	(3) Few, if any, of each child's instructional activities based on child's assessed level.
<u>Component 3: Record Keeping</u> (1) Records which reflect performance on levels and objectives kept on each child -- chart of sequenced objectives used	(2) Records which reflect performance on levels and objectives kept on each child -- chart of sequenced objectives not used	(3) Records kept on group(s) of children and records reflect performance on levels and objectives (4) Records kept on each child, but do not reflect performance on both levels and objectives
<u>Component 4: Frequency of Use of Learning Centers</u> (1) Learning centers used 4-5 times a week to provide instruction or reinforcement based on each child's assessed level and objectives	(2) Learning centers used on irregular basis to provide instruction or reinforcement based on each child's assessed level and objectives	(3) Learning centers used for purposes other than providing instruction based on each child's assessed level and objectives (4) Learning centers not used
<u>Component 5: Referencing of Materials</u> (1) Teacher maintains formal classroom file or similar system which keys classroom material and activities to levels and objectives	(2) Teacher maintains informal file, i.e., knows how materials and activities key to objectives and levels without having it written down	(3) Teacher maintains neither formal nor informal files or similar system which keys classroom materials and activities to levels and objectives
<u>Component 6: Opportunity for Self Selection (Interest Areas) (RELATED)</u> (1) Children provided opportunity 4-5 times a week to select their own activities	(2) Children provided opportunity to select their own activities less than 4 times per week	(3) Children rarely ever provided opportunity to select their own activities
<u>Component 7: Learning Materials (RELATED)</u> (1) Variety of materials are used (e.g., manipulative, paper/pencil, games)	(2) Materials used are largely selected from the Prescriptive Guide	(3) Materials are largely teacher developed (4) Other single sources of materials are used (e.g., text, kit)

Anything to the right of solid line is "unacceptable," to the left is "acceptable."
 Anything to the left of dashed line is "ideal."

There are two kinds of components. Components are said to be essential if not using them, or if not using them in a certain way, is unacceptable according to the developer of the practice. In order for a teacher to be considered "using" the practice as defined by the developer, all essential components must be used in an acceptable variation. A related component, on the other hand, may be used or not. There is no unacceptable variation of a related component. Note that in Figure 11, components 1 through 5 are essential; components 6 and 7 are related.

Variations of the components depict a range of possible teacher behaviors. These behaviors range in their acceptability to the developer. Sometimes there is more than one variation in a given category (i.e., ideal, acceptable, unacceptable), and other times there is no variation for a given category (e.g., there is an ideal way of implementing a component, and any other variation is unacceptable). Additionally, when there is more than one variation within a category, they are thought of as equivalent in acceptability or unacceptability.

Characterizing each practice by identifying components and their variations was an integral part of the Practice Profiles. We now describe how the profiles were developed.

Practice Profiles: Development

The keys to development of Practice Profiles were on-site interviews with developers, observation of the practice in actual use, and the continual interaction of field workers with developers throughout the development process.

Practice Profiles were developed by teams of one senior level study staff member and one field researcher who eventually would collect data from the school and districts implementing the particular practice. These "profilers" prepared for their task through three days of discussion, procedure development and training, practice in checklist construction, and simulation of the interview protocol. Two training sessions were held: one at the Texas R&D Center for those responsible for profiling National Diffusion Network innovations; the other at The NETWORK for those profiling innovations for the other three programs under study.

Profiles were developed using an eight-stage process.²⁰

Stage 1: Orientation to Practice. Before visiting the developer, we studied written materials describing the practice, including brochures, training guides, teachers' manuals, student materials, descriptive articles, and/or proposals. This provided a sense of the nature of the practice, and a suggestion of possible components.

²⁰The process, outlined in early work by the Texas R&D Center, was elaborated and expanded for the special purposes of the study through a collaborative effort of Texas and NETWORK staff.

Stage 2: Initial Developer Interview. Each developer was first visited for one-half to one day. The purpose of the visit was to find out, from the developer's point of view, (1) what the practice looked like when it was implemented, and (2) about certain characteristics of the practice. Three parts of this interview were:

- Becoming oriented. The interview attempted to get a "feel" for the innovation, including the developer's opinions and purpose, and the language he or she used to talk about the practice. Some of the questions asked were:

Would you describe (name of practice) for me?

Depending on the response, this was followed with questions such as:

What do teachers do?

What do students do?

How do students and teachers interact?

What would I see if I went into a classroom?

Describe a typical sequence of activities over a week in time.

Pick a classroom for me and describe what goes on in it.

- Identifying and describing components and their variations. Using the developer's language, and the information gained to this point, the interviewer probed regarding the different parts of the practice. Some of the questions asked were:

Tell me some more about (name of component).

You mentioned that (list of components) are important parts of your practice. What are some other parts? (Referring to printed material read before interview, if applicable.)

I read that _____ is a part of your practice. Is it an essential part?

If this component is not in place, would you consider the teacher to be using your practice?

Then, the interview turned to component variations, taking each component named by the developer and asking:

What would (name of component) look like in a classroom?

How would (name of component) be used, if it were being used as you really would like it to be?

What if (component) were being used exactly like

(description above); what are some other ways it might look?

Can you give me a version of that component that would be unacceptable to you?

- Ensuring collection of data on practice characteristics. Certain information was needed in order to describe the innovation on each of the eight innovation characteristics. Some of this information derived from the general flow of the interview; some required direct questioning; others combined data with information gained from the written materials. The instructions in Figure 12 provided guidelines of how to obtain the necessary information.

Stage 3: Interview with Exemplary Users. The next step was to visit a site where the practice was in use; in most cases this was the site where development took place, one which the developer considered "exemplary." Arrangements were made through the developer to interview one or more users and any other individual(s) who might help describe the practice in use. Questions asked were:

- Describe for me how you are using (name of practice).
- What would you be doing during your use of (name of practice)?
- What might your students be doing?
- Describe to me what I would see if I were to visit your classroom today.
- What are some other ways you have seen (the practice) used?

The interview then continued with questions related to each component identified by the developer, and additional ones noted by the users.

Stage 4: Observation of Exemplary Users. Wherever possible, field workers visited in classrooms where the practice was in use. This gave them a clearer notion of what the practice looked like, and also provided an opportunity to identify additional variations of the components.

Stage 5: Development of Preliminary Checklist. Immediately after the visit to the exemplary site, the team of field workers drafted a preliminary Component Checklist. This utilized information gained through reading, interviewing, and observing. In addition, the team reviewed the practice characteristics guide (Figure 12). Then it was clear what information was still needed to complete the Practice Profile.

Stage 6: Final Developer Interview. The purpose of this interview was to gather information that was still lacking, and to verify with the developer the description contained on the Component Checklist. Four steps were involved to:

- verify components, that is, to ensure that the team's division of the practice into components, and the description of each part, reflected the thinking of the developer,
- distinguish between essential and related components,

FIGURE 12: Instructions for Other Variables in Developer Interviews

"Other Variables"	What to do <u>During</u> Interview	What to do <u>After</u> Interview
1. Implementation requirements a. user (teacher) understanding and skills b. money c. materials and equipment d. personnel e. organizational arrangements, including grouping and movements of personnel in arrangements such as teaming, mini schools, etc.; scheduling 2. Purpose of innovation 3. Benefits of innovation (Concreteness) 4. Pedagogical approach	1. Do not assume that information in printed materials on imp. regs. is "final." If in course of interview you do NOT get information about these, then: a. ask about training requirements: preservice and inservice (how long; content, expected outcomes) b. ask about cost of start-up for an adoption site (money and in-kind contributions) c. ask what materials and equipment needed for implementation to occur d. ask about personnel needed: classroom teacher, aides, coordinators, etc. e. ask about commitments of space, time and scheduling needed. 2. Ask: "What are the main purposes of of the innovation?" "What is this innovation designed to achieve for students, teachers, school system?" Keep interchange short (5 minutes maximum). 3. Ask: "If a school were considering adopting the innovation, what benefits would you tell them the innovation might bring?" 4. Ask: "How would you characterize the the approach to education your innovation represents?" (philosophy; assumptions about how children learn, teacher's role; techniques employed)	1. Summarizes f-a-e on rating sheet. 2. Make a brief (1-2 sentence) summary of what developer says on rating sheet. You can supplement interview information from printed material.* 3. On a scale of 1-5, rate the concreteness of benefits.*† 4. Make a 1-2 sentence summary of the pedagogical approach on the rating sheet. You can supplement interview with information from printed sheet.*

*Note in writing the criteria by which you are making judgements.

†You can supplement interview with information from printed material.

FIGURE 12: Instructions for Other Variables in Developer Interviews
(continued)

"Other Variables"	What to do <u>During</u> Interview	What to do <u>After</u> Interview
5. Precision of definition of innovation.	5. (nothing)	5. Interpret this variable to mean "How clearly is the innovation defined? How precisely is it elaborated? Is it worked out in detail?" Then, on a scale of 1-5, rate the innovation on precision.*†
6. Prescriptiveness	6. (nothing)	6. On a scale of 1-5, rate innovation prescriptiveness. Note that prescriptiveness can vary within an innovation by component. You may want to give individual component ratings for yourself, but give an <u>overall</u> rating on the rating sheet with an explanation on the rating sheet that the rating is not even across components.*†
7. Complexity	7. (nothing)	7. Give an overall rating to the innovation on a scale of 1-5, comparing the innovation to others you know.*†

*Note in writing the criteria by which you are making judgements.

†You can supplement interview with information from printed material.

- verify variations for each component, and
- distinguish between ideal, acceptable, and unacceptable variations.

Stage 7: Finalization of Individual Practice Profile. Each team was responsible for completion of the two parts of the Practice Profile. First, they completed the Component Checklist. Guidelines for this activity are given in Figure 13. Second, they completed the ratings of innovation characteristics as directed in Figure 12. These were entered onto the rating sheet in Figure 14.

Stage 8: Finalization of Set of Practice Profiles. A critical activity in the development of our Practice Profiles was to standardize them. The 61 innovations we studied varied widely from a set of films to an alternative high school. If we were to make any comparisons across practices, or any generalizations about our total sample, we needed to be sure of two things:

- that our ratings of the innovations on each characteristic were as accurate as possible when comparing one to another (e.g., were those innovations rated "4" on complexity in our best judgment more complex than those rated "3"?), and
- that the components identified for each innovation were comparable in scope and magnitude (e.g., we did not want a component for one innovation to be "Use of a diagnostic/prescriptive program for reading" and a component for another innovation to be "Use of a diagnostic test," clearly a smaller scale component than the former).

Since as many as ten teams of field workers had developed the Practice Profiles, it was necessary to take a final step to make the profiles comparable.

This was done in several ways. Two senior staff members had responsibility for reviewing all of the component checklists for comparability of components, clarity, and format. Additional guidelines were applied:

- Components always should be stated with a noun and a verb.
- There should be six to twelve components.
- Expected behaviors should be described concretely.
- Variations should be mutually exclusive.

FIGURE 13: Completing the Component Checklist

1. A completed component checklist should have the following format:
 - a. Components should be numbered and listed across.
 - b. Put essential components at the beginning of the checklist, related at the end.
 - c. Variations should be numbered 1-5 and listed across the page, underneath each component.
 - d. Dashed lines separate ideal and acceptable variations; solid lines separate acceptable and unacceptable variations for a component. There must be an unacceptable variation for every essential component.
 - e. Always have a "not used" variation for each component.
2. Component labels should be descriptive, capturing the heart of the variations below. They also should be brief.
3. Multi-dimensionality of components. Components can contain one or more elements that vary. In its purest form, a component would simply be a dichotomous variable that is either present or absent. However, in the study we are not able to work with components which are discrete to the level of dichotomous variables. Many components will contain several elements. For example, below "testing," "pairing," "time of year" can all vary.

Component 3: Assessment of Language Dominance
and Ability in Each Language

(1)	(2)	(3)	(4)	(5)
Formal assess- ment of language dominance and ability 3+ times each year.	Language dominance and ability assessed twice yearly.	Language dominance and ability assessed at beginning of year only.	Language dominance assessed but not paired with ability testing in Spanish.	No evidence of testing specifically for language dominance.

It is impossible to represent all cells in the matrix with only 5 variations. Therefore, describe variations most like what exists at the site observed. The point is not to explicate every empirical possibility, but rather to locate a site somewhere on the ideal-acceptable-unacceptable replication continuum.

FIGURE 14: "Other Variables" on Innovation Characteristics

INTERVIEWER/FIELD RESEARCHER: _____

INNOVATION: _____

DATE: _____

D/D SITE: _____

Variable	D/D Response (+ Written Material)	Ratings:	Comments
1. Implementation Requirements	1. Implementation Requirements	Rate Questions 3, 5-7 on 1-5 (lo-hi) pt. scale	1.
a. Start-up Cost	a.		
b. User Skills/ Understanding (Training)	b.		
c. Materials/ Equipment	c.		
d. Personnel	d.		
e. Organizational Arrangements	e.		
2. Purpose of Innovation	2. Purpose of Innovation _____		2.
3. Concreteness of Benefits	3. Benefits of Innovation _____	3. Circle one: 1 2 3 4 5	3. Criteria for ratings:
4. Pedagogical Approach	4. Pedagogical approach _____		4.
5. Precision of Definition		Rate Questions 3, 5-7 on 1-5 (lo-hi) pt. scale 5. Circle one: 1 2 3 4 5	5. Criteria for ratings:
6. Prescriptiveness		6. Circle one: 1 2 3 4 5	6. Criteria for ratings:
7. Complexity		7. Circle one: 1 2 3 4 5	7. Criteria for ratings:

Other procedures were used to ensure comparability of innovation characteristics. For each of the quantified (scaled) variables -- Complexity, Concreteness of Benefits, Precision of Definition, Prescriptiveness, and Implementation Requirements²¹ -- a team of two field workers, who were familiar with all of the innovations, reviewed the ratings given on the Practice Profiles. They adjusted the ratings when necessary to reflect their intensity relative to the other innovations. When adjustments in ratings were made, these were checked with the developers of the particular Practice Profile.

For the characteristic of Size, all staff who had developed Practice Profiles ranked all the innovations from "largest" to "smallest." Because Size was a complex "mega-variable," we developed a list of indicators to use in giving a Size rating. These were:

- the kinds/amount of demands placed on the institution:
 - facility required
 - amount of coordination
 - amount of training
 - cost of start-up
 - amount of time each day impacted by program
 - pervasiveness of program in school
 - 1. grades affected
 - 2. personnel needed
 - 3. special personnel
 - 4. administrative problems.
- the kinds/amount of demands placed on the individual:
 - changes required in attitudes, behaviors, role, skills,
 - content taught, materials (complexity of materials)
 - management required
 - coordination needed (with other teachers)
 - type of interactions required (with students)
 - support needed (administrative)
 - amount of time devoted to use each day (organization for teacher)
 - number of students the user must work with at one time.

After staff members had ranked individually each of the 61 practices, a discussion for reconciling discrepancies resulted in a consensus ranking.

²¹The Practice Profile yield two assessments of Implementation Requirements: a scaled (1-4) estimate of the magnitude of requirements, and a listing of actual requirements (see Figure 12).

The last two characteristics, Purpose and Pedagogical Approach, were qualitative in nature. Again, for each variable, teams of two staff members assembled descriptions for all 61 practices and arrived at a manageable number of categories. For Purpose, these categories were:

- Student Basic Skill Remediation,
- Programs for Non-Regular/Special Needs Students,
- Student Affective/Process Skill/Personal Development,
- Integration of School with Outside World,
- Integration Across subject Levels, and
- Materials or Processes for Regular Subject Areas.

For Pedagogical Approach, these were:

- Behavior Modification,
- Experiential/Affective,
- Experiential/Content Oriented/Teacher Directed,
- Experiential/Content Oriented/Inquiry,
- Diagnostic-Prescriptive/Individualized/Combination of Teacher and Student Direction,
- Diagnostic-Prescriptive/Individualized/Developmental,
- Diagnostic-Prescriptive/Individualized/Highly Teacher Directed, and
- Group Oriented/Teacher Directed.

For each characteristic, each practice was assigned to the category that best described it.

Practice Profiles: Use in the Study

The practice characteristics section of the Practice Profile was entered into the study data base and utilized directly in analyses. Information about the Component Checklist, such as number of components and division of components between essential and related, was also entered into the data base. The component checklists were then used as a tool to measure use of the practice by individual teachers in the sample. Two different uses of the practice were:

- Present practice. The interviewer asked each teacher how he or she currently used the practice. Each component was probed. The interviewer then completed a Component Checklist for each teacher, circling the variation within each component that best described use; if a variation was depicted by the teacher that was not on the Checklist, it was written in. (Interrater reliability for the rating of present practice was .72.)
- Past practice. The interviewer asked the teacher to describe what he or she had been doing, prior to adoption, in the area focused on by the practice (e.g., in reading, if it was a reading program). Each component was probed. The interviewer then completed another Checklist, this one depicting past practice. (Interrater reliability for the rating of past practice was .75.)

Constructing Variables for Use of Practice. The two checklists (present practice and past practice) for each teacher were coded as follows:

ideal = 3
acceptable = 2
unacceptable = 1
absent = 0

We then summed the score for each component to provide total present practice and total past practice scores. We used practice scores to calculate the three variables (1) change in practice (the distance between past practice and current practice), (2) amount of required change (the distance between past practice and ideal practice), and (3) fidelity (the distance between current practice and ideal practice). Formulas for scoring these variables are included in Chapter IV of Volume II: Outcomes.

Levels of Use

One of the objectives of the study was to understand whether teachers ultimately used the new practice they had adopted, and if so, with what level of facility, mastery, or sophistication. We selected the Levels of Use scale (LoU) to measure this particular outcome of implementation. LoU is a developmental sequence of behaviors exhibited by teachers as they experience and progress through the process of change (see Figure 15). The levels, conceptualized through research at the Texas Research and Development Center for Teacher Education (Hall, Loucks, Rutherford & Newlove, 1975), represent a "meta-variable" that incorporates use/nonuse of a practice, mastery of skills and understandings required by the practice, and an increasing ability on the part of the user to adjust the practice to the unique needs of the classroom setting. In the first three Levels of Use, the practice is not being used by the teacher: Nonuse, Orientation, and Preparation. As use begins, teachers are usually at the Mechanical Level; later they reach a Routine Use. When teachers are at the levels of Refinement, Integration, and Renewal, they are making adaptations in the use of the practice.

Figure 15 is the Levels of Use Chart, which operationally defines the Levels of Use (Hall et al., 1975). A series of decision points differentiate one level from the next. Seven categories representing different kinds of behaviors (e.g., Assessing, Acquiring Information, Planning) help to describe individuals at each level.

Assessment of Levels of Use

Field researchers assessed Levels of Use through a focused interview procedure (Loucks, Newlove & Hall, 1975). For over seven years, researchers have used this procedure with thousands of teachers and university faculty members, focusing on over one hundred different innovations. Researchers established the validity of the interview utilizing an ethnographic methodology and interrater reliability through second-rating of interview tapes (Loucks, 1977).

FIGURE 15: Levels of Use of the Innovation: Typical Behaviors

Levels of Use	Behavioral Indices of Level
VI Renewal	The User is seeking more effective alternatives to the established use of the innovation.
V Integration	The User is making deliberate efforts to coordinate with others in using the innovation.
IVB Refinement	The User is making changes to increase outcomes.
IVA Routine	The User is making few or no changes and has an established pattern of use.
III Mechanical Use	The User is making changes to better organize the use of the innovation.
II Preparation	The User is preparing to use the innovation.
I Orientation	The User is seeking out information about the innovation.
O Nonuse	No action is being taken with respect to the innovation.

From: Hall, Loucks, Rutherford & Newlove, 1975.

In our study, the Levels of Use Interview was included in the User Interview. Field researchers received standard interviewer training and met the criteria for interrater reliability at the completion of training, which was a minimum of 65% agreement on the overall Level of Use.

Differentiating Two Levels of Use

The Levels of Use Interview originally was intended to first differentiate users from nonusers (nonusers are LoU 0-II and users are LoU III-VI), and then to establish the more specific level at which the individual is functioning. The use/nonuse decision is based on whether the user meets the established "minimal criteria for use." The Practice Profile provides an optimal way of describing these minimal criteria. For the purposes of this study, we decided that to be a user of the practice as defined by the developer, the individual would have to use all essential components in an acceptable or ideal variation. Thus once the field researcher determined if this was the case, he or she made the use/nonuse decision and then proceeded to assign the teacher a Level of Use. This was the Level of Use of the developer's practice.²²

At the onset of the study, however, we did not know how "faithful" users' implementation would be to the developers' descriptions of their practices. We suspected that some components of the practice would be in unacceptable use, but we still wanted to know how skillfully they were being implemented. We decided that it was important to be able to assign the teacher a Level of Use for whatever use was being made of the practice. Therefore we assigned a Level of Use of current practice.²³ For this variable we assigned a level of use to "unacceptable" uses of the practice.

If the teacher was using the practice with every component in at least an acceptable form, both Levels of Use or Practice Mastery assignments would be the same. If, on the other hand, one or more component was not used acceptably, then the teacher would be assigned Level III or above for Practice-Related Mastery, plus a Level 0, I or II for Practice-Specific Mastery.

²²This variable was called Practice-Specific Mastery, which we believed made it more understandable to those unfamiliar with the Levels of Use concept, and tied it directly to the practice profile itself. For more details, see Volume II, Chapter IV: Outcomes.

²³This variable became known as Practice-Related Mastery, since we knew it would reflect some use of the practice, but in many cases, an adapted version.

Section 4: Data Analysis

In this section we discuss briefly our data analysis steps and strategies, for both the survey and the field study. In Section 5 we discuss in greater detail the causal path analysis used to test our models for school improvement for the purpose of understanding what factors contributed to success. These analyses used data from our survey component. In Volume IV of this report series, a detailed description of analysis methods for field study data is presented.

Analysis of Survey Data

Analysis of data from the 23 separate forms used in the survey, occurred in several phases. First, after the data base was mounted and cleaning was completed, descriptive analyses were run on all variables. Study teams working on different sets of variables (e.g., the Texas staff on local site variables, American University staff on external facilitator variables, and Miles and Huberman on outcome variables) studied the distribution statistics and suggested the creation of additional derived variables and the scaling of other variables. An example of additional derived variables was the differentiation of three kinds of teacher efficacy or control from the original six items measured:

- Teacher Efficacy -- the extent to which a teacher felt he or she had any influence over the learning or growth of students (two items);
- Control Over Implementation -- the extent to which a teacher felt he or she had any influence over the adoption or use of the new practice (two items); and
- Teacher Autonomy -- the extent to which the teacher was given freedom to decide how and what to teach (two items).²⁴

An example of scaling a variable was institutionalization of the new practice, which was scaled to range from low to high, depending on the ratings given to seven items on the administrator questionnaire.

We also conducted bivariate analyses, largely cross-tabs and correlations. These and the distribution statistics gave analysis teams crude determinations of the nature of sample scores and the presence or absence of relationships. Further study allowed us to specify other relationships to test, disqualify some variables from further analyses because of lack of distribution or reliability, and determine where factor analysis would provide clarity and strength to item sets. An example of the last was the

²⁴More detail on these variables and others used as examples in this section can be found in Volume II. 171

factor analysis of 16 items dealing with how teachers spent their time related to the new practice, which resulted in 5 major emphases: classroom use, materials, evaluation, training and communication.

After careful consideration of this first round of analyses was completed, we ran another set of bivariate analyses; in the case of a small number of variables, we conducted yet another run. One result of these analyses was the findings reported in Volume II: an elaborate description of the people, practices, and places where school improvement was said to be occurring. Another result was the specification of the models to be tested using causal path analysis. Variables which appeared robust and seemed to be related to the various outcomes of interest were built into the models.

In the final phase of analysis of survey data we tested the causal models. We describe the procedures and dilemmas of this analysis method in detail in Section 5; we report findings in Volume III.

Analysis of Field Study Data

The 34 research questions specified for the field study drove the data analysis from the beginning. We developed a systematic set of codes based on the questions, which were applied to the written up site visit accounts after reliability-checking. Some additional codes emerged and were used as well. Coding was carried out between site visits.

After the second site visit, an interim site summary was produced to assess the state of our knowledge about each site and to define concluding data-collection activities.

When all site visits and data coding were complete, the field worker for a site produced a basic site report typically of about 90 pages, assembling all relevant information for the site in one place.²⁵ The site reports followed a common format including an abstract, background/contextual features, local organizational chart, description of the data base, an event chronology for the implementation of the innovation, answers to the 34 research questions, and causal analysis of events and system changes in the site. To produce the site report, the researcher scanned coded site visit accounts, and collected and analyzed coded segments using a wide range of matrices and diagrams to display the basic data in addition to the usual narrative text.

²⁵The 12 case reports are available at cost from The NETWORK, Inc. A list of cases and prices is available upon request.

Since the site reports were written in a fully comparable format, the cross-site analysis appearing in Volume IV could be carried out in a straightforward manner. Typically, for any given research question, this proceeded through four steps. First was a descriptive "meta-matrix" assembling data from all 12 sites in one large table. This usually led to various "predictor-outcome" matrices which ordered the 12 sites according to a particular outcome, and examined a series of predictors leading to it. Third, we developed cross-site causal networks that showed comprehensive explanations in graphic form. Finally, we were able to sort out the within-site causal networks from the site reports into more-generalized "scenarios" or families of sites showing similar causal dynamics.

Section 5: Model Building and Causal Analysis

Our Conceptual Models

In order to test the causal relationships among the variables in our data base, we developed a series of conceptual models to guide our analyses. These conceptual models began with those developed for our Final Study Design (see Chapter II, Section 1) and were altered by results from the descriptive statistics on the items and variables in our data base. Following this approach, the basic analytical tools used in the analysis of these data were Least Squares Regression Analysis and Structural Equation models. These two approaches rely upon the specification of an a priori model relating the independent or causal variables with the outcome measures. The conceptual models were translated into corresponding linear models, the parameters of which were then estimated using either standard least squares regression methods or a maximum likelihood approach as suggested by Joreskog (1976). These latter approaches were implemented by the computer program termed LISREL.

An issue that we needed to resolve in order to proceed with the analysis was whether to develop a different model for each of the five different programs (e.g., NDN Title I, BEH Market Linkage). Given the scarcity of data for certain programs and our belief that the process of change would be similar across different programs, we opted to fit a general model for our total data base. Hence, for our basic causal analyses, data were always pooled across programs, after eliminating the mean level differences among the programs, thus assuming that the basic structural relationships among the variables was the same for all programs. We did examine this issue by separately analyzing data from the NDN sample, and contrasting the results against those obtained from the pooled analysis across the five types of programs. The results from all model testing are presented in Volume III.

The remainder of this section describes how we analyzed each of the models we developed. Before discussing the models, however, we describe a general analysis problem concerning our data, which influenced the procedures we used for testing all models.

The Unit of Analysis

The data for this study came from a stratified hierarchically-nested sampling design. As described in Chapter III, this was accomplished in multiple stages, with programs and states being selected first. We later selected school districts, schools, practices, participants within schools, and finally local and external facilitators. The hierarchical nested nature of this sampling design has implications for the analysis. In addition, the hierarchical nature of the variables of interest in this study concomitantly has implications for the analysis approach.

We defined some variables that apply to organizational units that house many individuals (e.g., schools and school districts), as well as other variables that apply to a single individual within an organization (e.g., a teacher). These variables and their definitions coincide with the hierarchical nature of the sampling design. The variables defined conceptually in terms of and collected from teachers can be used not only to characterize those individuals, but also, when aggregated, to represent a school in which those teachers teach. The same reasoning is true for the school level data; here, however, the variables primarily defined and collected at the building level, not only represent a characteristic of the school, but represent any individual who is a member of that school. In other words, variables are defined and collected not just at one level of the hierarchical nested design, but reside at each of the two key focal points in this design, i.e., the school and the individual teacher. Therefore, throughout the study, an analysis approach which recognized multiple levels of data had to be used.

In more technical terms, the analysis approach for the study takes into account the hierarchical design and the fact that variables are defined and collected at both levels of the design. When analyzing data, we took an approach that calculated minimally biased estimates of the regression coefficients for variables defined at the different levels of the design. For example, in order to account for the change in a teacher's teaching after implementing a new practice, we needed to examine variables characterizing that teacher and/or his or her interactions in the classroom; however, we also had to consider variables that described where that teacher worked. The traditional approach to obtaining minimally biased estimates describing the effect of the individually defined variables (i.e., teacher characteristics, experience, etc.) on change in teaching (an individually defined outcome) is to derive the estimates using the covariance matrix of the variables which is pooled within schools. This approach eliminates the differences among the schools, since all variables are mean-deviated with respect to the school to which those

individuals belong. This approach yields a covariance matrix that is then free of school level variables and that contains all the information necessary to explore relationships among variables defined at the individual level.

The more difficult problem inherent in our analysis associated with the hierarchically-nested design is examining the effect of the school level variables on an individually defined outcome. Consider the effect of school size on change in a teacher's teaching. In this case school size is defined and collected at the school level, while the outcome measure -- change in a teacher's teaching -- is still operationally and conceptually defined in terms of the individual teacher. Some traditional approaches suggest aggregating the individually defined variables for all those individuals at a given school to form school level means. Finding the average of the values for all individuals at a school clearly represents an unbiased estimate of what is typical at that school. Since this process results in a single value that is defined at the school level, this can then be examined in its relationship to other variables defined at the school level. All variables are now in some sense defined at the school level.

Frequently, the covariance matrix is found by using the mean and school variable as the basic data. The difficulty with this approach is that, under traditional assumptions of a random effects model, the expected value of that covariance matrix is a function not only of the covariance matrix defined at the school level, but also of the covariance matrix defined in terms of the individual. Hence, the analysis which would attempt to relate the school level variable -- size -- to the individually defined variable -- change in teaching -- by use of this covariance matrix would be biased. In other words, the regression coefficient relating the school level variable to an aggregated individually defined outcome variable would not only reflect the contribution of that school level variable, but could also reflect the contribution of other variables defined at the individual level.

This suggests the need for an analysis approach which enables one to adjust the various effects at one level, the school, for the effects at the other level, the individual teacher. The difficulty is in obtaining minimally biased estimates of the effects associated with a school level variable and its relationship to the individually defined outcome.

In order to accomplish this adjustment, we followed a modification of the general procedure described by Wiley (1973). In his approach, Wiley suggests a two-stage process by which one can adjust for the effects at each of the other levels. In the remainder of this section, we discuss the application of Wiley's procedure to each model.

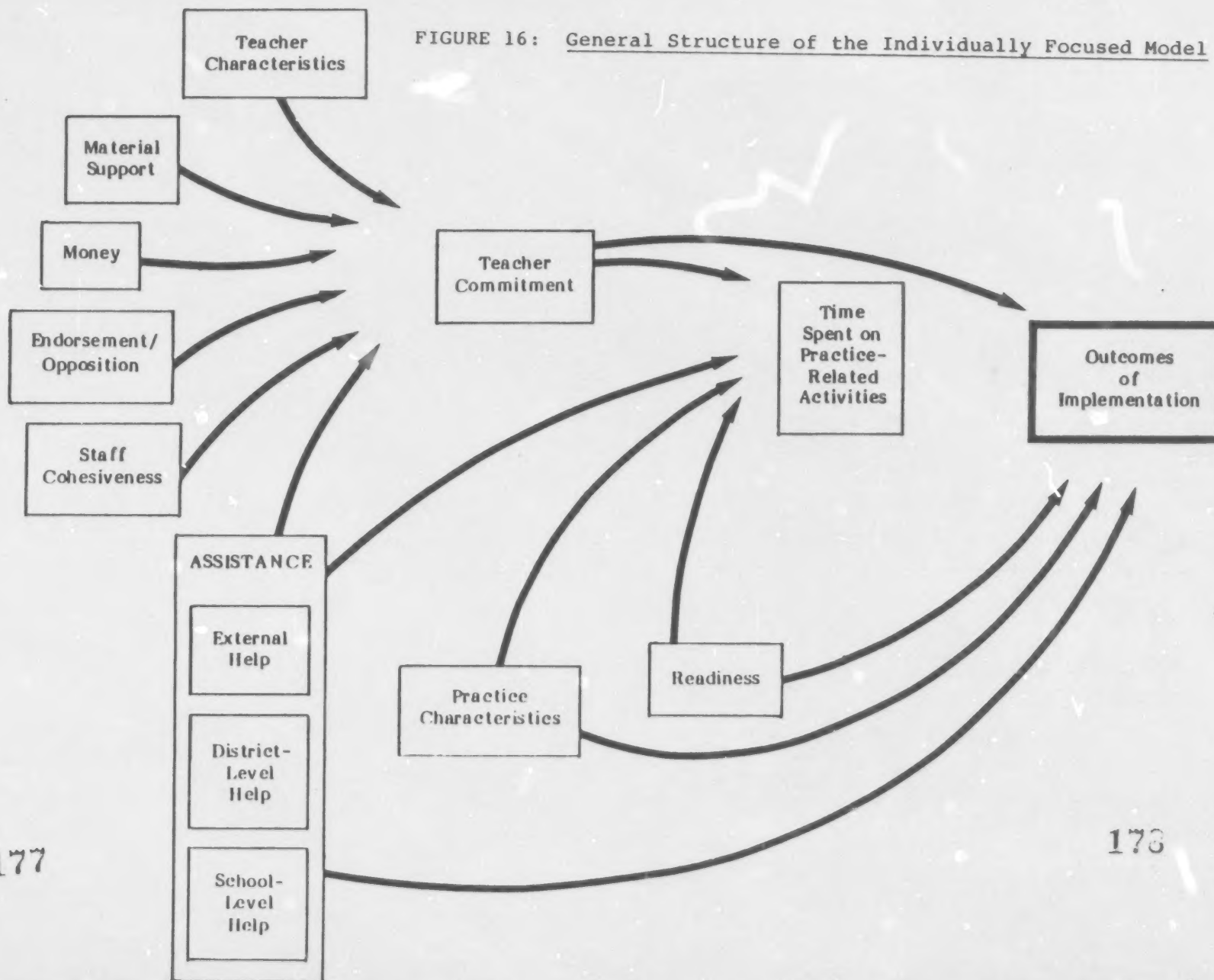
Individually Focused Models

In this section we describe in detail the analysis procedures we employed in testing models that explain outcomes that are individually focused. In other words, these models focus on explaining variables which apply to individual teachers, rather than whole schools or school districts. For example, one model tries to explain the change that takes place in an individual teacher's teaching; this can be contrasted with our school-focused model, which tries to explain the institutionalization of the new practice in the school district.

Figure 16 illustrates our individually focused model. Although the outcome variables are experienced by the individual teacher, hence the label individually focused, some of the other variables in the model are defined at the school level. Therefore, in analyzing this model we faced the unit-of-analysis problem discussed in the previous section. The analysis of this individually focused model could be completed using any of three approaches. The first and second approaches revolve around structural models. Here, the relationships among all variables would be built directly into one set of equations. Some variables influence others, which in turn influence the outcome; however, the analytical procedures employed would take this into account. Given the complex nature of the relationships presented in Figure 15 and the hierarchical nature of our design, we chose to follow a simpler analytical approach. We chose to model these relationships using standard linear models, commonly called regression models. The relationships suggested in Figure 15 were translated into a series of regression equations. A variable with arrows entering into it would be included in a regression equation as an outcome measure, along with the variables from which the entering arrows flowed; these latter variables were the independent or predictor variables in that particular equation. Except in the case of the ultimate predictor variables (e.g., material support, teacher characteristics) and the ultimate outcome variables (i.e., change, practice mastery, and benefits), variables that were outcomes in earlier equations function as predictor variables in later equations.

Weighted least squares was used in the fitting of the resulting linear model to the data. However, because of the complexity introduced by modeling variables defined at different levels, a straightforward application of least squares regression was not possible. In order to fit the individually focused model, regression procedures were modified and applied in two stages, enabling the examination of effects that reflected variables defined at different levels. In the remainder of this section we outline the statistical steps used to fit this model. We describe the procedures for cases in which a single outcome measure is explained by a single predictor variable defined at the individual level, and a single predictor variable defined at the school level. The procedure suggested for this three-variable example would be the same for a larger number of variables, except that it would not be a bivariate regression model but rather a multiple regression model.

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Before turning to the steps, let us again focus on the purpose of this analysis.²⁶ Imagine the following context: one individually defined outcome measure represented by y , one predictor variable also defined at the individual level represented by x , and finally one predictor variable defined at the school level and represented by the letter z . In the example that follows, the subscript i represents the teacher, and the subscript j the school. The goal of this procedure is to find the least biased estimate of the coefficient relating x to y , while controlling for z , and simultaneously to find the coefficient of z , which represents the relationship of z to y , while controlling for x . Attaining this goal is complicated; x and z are not defined at the same level in the design. In other words, if x and z were both defined at the individual level, ordinary multiple regression procedures would ensure unbiased estimates of those two coefficients. It is unclear what values of x and z would be used to attempt a straightforward application of multiple regression. For example, one could use the mean of x and the mean of y so they are similarly defined at the level of z , and the number of units is equal to the number of schools. If this were done, the coefficients would reflect the effects of individual teachers as well. On the other hand, using z as an individually defined variable, even though it is not, would raise additional problems.

The approach we used estimates the coefficient linking x to y . Then using this information, it makes various adjustments; so that finally one can obtain a minimally biased estimate of the coefficient relating z to y . The first step fits the model in Equation 1, relating the x variable to the y variable, or in other words, deals only with those variables defined at the individual level. This is accomplished by obtaining the pooled within cell covariance matrix, where the cells are defined as the schools. By pooling this covariance matrix within schools, you remove all effects of school level variables from the analysis. This approach produces an estimate which is unbiased, and reflects the contribution of the individually defined variable x to the individually defined variable y . This process is accomplished by ordinary regression, applied to the pooled within school variance-covariance matrix.

²⁶Let us also note at this point that the following discussion is for the benefit of methodologists who might want to understand and replicate these analyses. There is no attempt to provide the explanations and examples needed for a less technically-trained reader to fully comprehend the approaches used.

Equation 1

$$Y_{ij} = \beta_0 + \beta x_{ij} + e_{ij}$$

The second step in the process is to obtain a minimally biased estimate of the coefficient relating z to y , where z is adjusted for its relationship to x . Here we estimate the y value at the aggregate level by applying Equation 2 to the data.

Equation 2

$$\hat{Y}_{\cdot j} = \hat{\beta}_0 + \hat{\beta} x_{\cdot j}$$

In Equation 2, $\hat{\beta}_0$ and $\hat{\beta}$ are the estimated coefficients arrived at from the first step. In this model, the mean value of x is inserted into the equation, which produces the predicted mean value. This is done so that the effect of the individual can be taken out of the aggregated mean; Equation 3 accomplishes this goal.

Equation 3

$$Y_{\cdot j} - \hat{Y}_{\cdot j} = Y^R_{\cdot j}$$

Here $Y^R_{\cdot j}$ is the residual y value, or in other words, that part of the mean for school j which is not predicted by the individually defined part of the model. It is this part which is then used in subsequent regression analyses.

The next step in this procedure is to take the school level variable z and find its relationship to the aggregated x variable. This step is done through a fitting of Equation 4.

Equation 4

$$Z_j = \gamma_0 + \gamma x_{\cdot j} + e_{\cdot j}$$

In this equation γ_0 and γ represent the regression coefficients linking the mean of x to z . The fitting of this model is accomplished by ordinary least squares regression. The resulting estimates are employed to generate the predicted z value, or in other words, the predicted school level variable, based on its relationship to the aggregated x variable; this is reflected in Equation 5.

Equation 5

$$\hat{Z}_j = \hat{\gamma}_0 + \hat{\gamma} x_{\cdot j}$$

Once this is accomplished, the predicted z can be used with the original z to generate a residual z :

Equation 6

$$z_j - \hat{z}_j = z^R_j$$

The z^R_j represents the part of the school level variable after it has been adjusted for its relationship to the aggregate x variable. This assures that the coefficient relating the residual z variable to the residual y variable is adjusted, not only for the relationship of x to y but also for the relationship of x to z . The final step in the analysis is accomplished by the fitting of Equation 7 to the data.

Equation 7

$$y^R_{\cdot j} = \alpha_0 + \alpha z^R_j + e_j^{**}$$

Where $y^R_{\cdot j}$ and z^R_j are the residuals of Equations 3 and 6. As explained in the preceding paragraphs, these two variables have now been adjusted for their relationships to x . In this way, the outcome measure now reflects that part which cannot be accounted for by its relationship to the individually defined variable x . In addition the z variable is adjusted for its relationship to the x variable. As mentioned previously, if they were both defined at the same level, multiple regression procedures would automatically adjust the coefficient of the one for the presence of the other variable. However, in this instance, since the variables are defined at different levels and therefore cannot be applied simultaneously, adjustments are necessary to take into account the relationship of z to the x variable.

The final results can be summarized in the model of Equation 8 where β relating the x variable to y is the one obtained from the fitting of Equation 1. In this same equation the minimally biased estimate of α is found by the fitting of Equation 7 to the data. Once the steps described above have been completed, the coefficients from the fitting of models 1 and 7 to the data are the coefficients that are minimally biased and adjusted for each other and reflect the contributions of x and z to y . In other words, the β coefficient reflects the adjustment for the school level variables through the pooling as described previously, and the coefficient α reflects the contribution of z to y , adjusting for x where the adjustment is done in terms of the residuals, as described in Equations 4, 5, and 6. This procedure then finally provides coefficients linking the individually defined variable and the school level defined variable to the individually defined outcome measure. In this fashion, it gives the coefficients that are minimally biased. We recognize that this procedure is not the most efficient, but it does yield minimally biased estimates and ones that can be obtained at reasonable cost for such a large data base.

Equation 8

$$Y_{ij} = C + \beta x_{ij} + \alpha z_j + \Delta_{ij}$$

Splitting the Sample

As we began to examine the relationships between the predictor and outcome variables in the individually focused model, we noticed differences that seemed to be critically connected to one variable: the amount of change the adoption of the practice called for on the part of the teachers. Early in the study we realized that for some teachers the practice of interest would be very similar to the way they already had been teaching. For others this new practice would mean doing things they had never heard of before. In one case teachers could be changed a lot, while in the other they could not really change very much. Using the Component Checklist as a point of reference, we measured what teachers did prior to exposure to the practice on each component and compared this to the ideal variations of each component in the checklist. We then created a variable which represented the amount of change the adoption of the new practice could require on the part of the teacher: Amount of Required Change.

When we tested our models using the total sample, we found no significant causal relationships among any of the variables. Upon further examination, we found some relationships did exist between the same variables for those individuals for whom a large amount of change was possible, whereas they did not exist for those individuals where only a minimal amount of change was required. This led us to consider that the participating teachers were not a single sample but represented two distinct groups: (1) those for whom a lot, or major, change was required, and (2) those for whom a little, or minor, change was required.

These preliminary findings concerning the variable amount of required change were further complicated by our realization that the amount of change any practice could cause in a classroom was to some degree an artifact of the nature of the practice. More simply, those practices which had a large number of components had a greater potential for causing change than those practices with only a few components.

The amount of change a teacher actually undergoes as the result of adopting a new practice is a central outcome variable. Given the centrality of the concept of change to the individually focused model, we felt it was necessary to control for the influence of the amount of required change a teacher could undergo during an adoption, whether or not this was a function of how the teacher taught in the past or of the size of the practice.

There were two methods by which we considered controlling for the amount of required change on the part of an adopting teacher. The first approach divided change scores for a teacher by the number of components in the practice he or she had adopted. This method, however, still ignored the influence of the teacher's past teaching on the amount of change which took place.

The second approach was to split the sample into different groups, defined in terms of the amount of change that was possible. Relationships among all variables would then be to some extent controlled by the amount of change that was possible. We therefore chose the second approach.

In summary, all analyses performed on the individually focused model were performed twice, once on each of two distinct groups. The first group represented teachers for whom the amount of possible change was large. In simpler terms, this was the group of teachers that had the greatest distance to go in order to achieve an ideal replication of the practices they were adopting. The second group, on the other hand, represented those teachers who had to undergo little change in order to be using the practice in its ideal form. This represented those situations where the change that needed to take place was small, at least smaller than that of the first group.

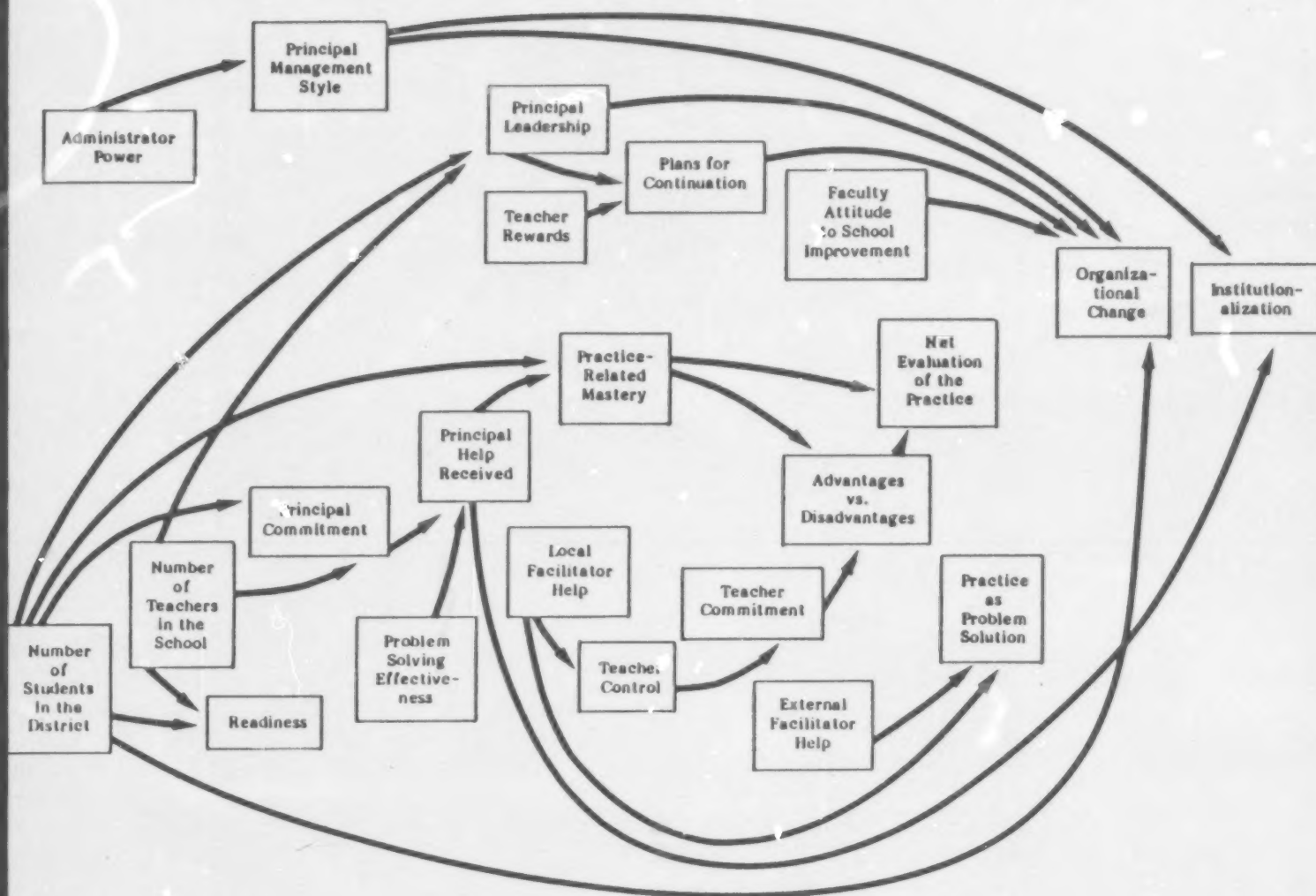
School-Focused Model

The school-focused model, in which outcome measures are variables defined at the school level, is illustrated in Figure 17 (page 150). There are a number of differences and similarities between this model and the individually focused model. Both models contain variables defined and collected at the school level and at the individual teacher level. However, individually focused model outcomes are variables describing individual teachers, whereas in the school-focused model, the outcomes are associated with an organization, either a school building or a district.

For example, the eventual outcomes of institutionalization and organizational change are variables that are defined in terms of the whole school, not the individual teacher. Again, therefore, we have a model with variables defined at different levels.

Due to a lack of time and funds when analyzing data for the school-focused model, we did not perform the adjustment procedure (described in the previous section) for taking into account the hierarchical nature of the design. In other words, individually defined variables were simply aggregated and then related directly to school defined variables. When these aggregated individually defined variables are directly related to school level variables, the coefficients produced by fitting the models to the data are likely to be biased. However, since we felt some examination of this model to be desirable, we proceeded with this less than ideal analysis.

FIGURE 17: Reconceptualization of Relationships Among Factors
Influencing School-focused Outcomes



The variables in the school-focused model were either defined and collected at the school level, or they were defined and collected at the individual level and then averaged to the school level. The analysis was performed on the covariance matrix produced by pooling the mean deviations of the school variables from the program means. This pooled covariance matrix was calculated to remove the effect of individual programs and to make the model applicable to all programs.

The school-focused model was then examined by the application of maximum likelihood procedures. The conceptual model as represented in Figure 17 was transferred into a series of linear equations reflecting the relationships as suggested in the model. Maximum likelihood procedures were used to obtain the estimates of the parameters, the causal coefficients. This was accomplished by the use of the computer program LISREL, developed by Joreskog (1976).

The Analysis Sample

One last issue in need of exploration in this chapter is the problem of missing data. Given the large number of schools, respondents, variables, and instruments in this study, there were extensive missing data in this data set. The missing data caused a great deal of difficulty for the analysis, both for the individually focused model and for the school-focused model. Any individual and/or school on which any variable was missing had to be dropped from the analysis. In other words, we did not attempt to estimate missing values and use them in the analysis. All analyses reported, both at the individual and at the school level, were done on a set of cases on which complete data were available. For every case used in these analyses, we had no missing data. One other point that should be mentioned is that some of the variables which we had hoped to include in our conceptual model had to be dropped, because those variables had such extensive missing data that to include them would have cost us dearly in terms of numbers of cases.

The dropping of cases due to missing data raises the question of whether the sample used to test the models was significantly different from the total study sample. In order to answer this question, we compared the scores of respondents in the models to scores of the respondents in the total sample for each item that was used in the construction of any variable in the models. Based on the results ($r = .89$, $p < .05$), we concluded the sample used for testing the models was not biased.

The analyses reported in Volume III were all done on the same basic data set. All analyses reported on the individually focused model were performed on exactly the same number of cases. However, the analysis performed on the school-focused model was done on a slightly smaller subset of cases, which in this case means schools or sites; the inclusion of additional school level variables resulted in a further loss of cases. We settled for the slight reduction in sample size in order to include additional school level variables.

CHAPTER V: SUMMARY AND CONCLUSIONS

In this chapter we reflect back on our learnings from the "stage-setting" phase of the study. How did our conceptualization of the process of dissemination for school improvement influence our design and methodology? What were our major successes? What problems arose? What did we learn that should influence future research in this area? These and other questions are discussed as we conclude Volume I.

Conceptualization

Four research objectives guided conceptualization:

- to examine assumptions underlying current and alternative dissemination strategies;
- to explore and describe the structure and operations of major USOE dissemination activities;
- to explore and describe the structure and operations of state dissemination activities, and to examine the relationships between federal and state dissemination efforts; and
- to determine the extent to which and the ways in which new practices disseminated with the support of these programs are actually carried out in local schools, and to determine the conditions that contribute to or are obstacles to their effective implementation.

These objectives were broad, and so our initial conceptual framework reflected in a global way the relationships we posited to be important as dissemination strategies used to improve schools. Fortunately, a large number of previous research studies gave us a strong foundation upon which to build our conceptualization. These studies had produced strong evidence -- oftentimes replicated -- that certain factors led to or detracted from improvement. On the other hand, although the territory could not be called "uncharted," our study did have much new ground to explore. First, the previous studies were all dated, since they had mapped a world of federal funding at least five years older and much less mature than that which we were facing. Second, ours was the first major study that had the opportunity -- and some state-of-the-art tools to take advantage of it -- to look closely and carefully at teachers in classrooms and how they actually used the results of dissemination. The insights to be gained from a policy study getting this close to the "trenches" could be extensive, we believed. Finally, there were many questions left unanswered by earlier studies, such as what different outcomes resulted from federal school improvement strategies that differed dramatically in their assumptions and operations. Thus, guided by

the objectives and findings of earlier studies, and by what our knowledge and experience told us were gaps in the understanding of school improvement, we proposed a conceptual framework.

The evolution of our conceptual framework turned out to be a desirable feature of the study. Rather than being narrowly confined to one conceptualization proposed and finalized early, we changed the posited factors and relationships as we interacted with other researchers and practitioners, developed the study design, performed our sampling procedures, collected our data, and conducted preliminary analyses. These activities led to more complete, intimate understandings of the inner workings of school improvement. They also fed into development of the causal path models whose testing, both quantitatively with survey data and qualitatively with field study data, helped us explain what influenced the success of improvement efforts.

Another desirable feature of our conceptualization process was the contribution of different parts of the study, whose designs were developed along associated but somewhat differing lines. The federal and state policy analyses focused on the evolution of school improvement policies, and then on the assumptions underlying current policies, and on the procedures used in implementing them. The exploration of external assistance developed from an understanding of the worlds of individuals in such "boundary-spanning" roles, who they were and what they did to carry out the federal and state policies which authorized their existence. The local site survey began with an exploration of classroom and school characteristics in places where these policies were reported to have had an impact. Finally, the field study emphasized the dynamics of school improvement -- the activities and occurrences that characterized the implementation of new practices in classrooms and schools. As the study evolved, these four efforts helped and informed one another, both substantively and methodologically.

Study Design

The study design also evolved over the course of the study. As with the conceptual framework, we found it useful to have sufficient time for design development at the beginning of the study (e.g., in the local site survey and field components, we had a year before data collection began). Designing and conducting the federal and state policy analyses early in the first year informed the sampling of local sites and respondents, as it sharpened our focus on the areas that we would be most interested in as we explored classrooms, schools, and external assistance activities. The field study developed into a more intensive component of the design as the need surfaced to look closely at processes and dynamics of implementation impossible to capture in a survey.

Another aspect of our design that made it different from other studies was our ability to follow a given practice from its development and dissemination through its use in multiple classrooms. Thus we were able to "examine the chain of school improvement" by first seeing a practice as its developer conceived it; reconstructing the interventions that led to and included training teachers at a particular set of sites in its use; exploring the activities and support that surrounded the practice in specific school settings; and developing a picture of the practice's use by individual teachers. The design that enabled us to do this also allowed us to test what factors acting along the chain led to success in the school and classroom.

Instrumentation

The study used 23 data collection instruments. Many of these were developed specifically for use in the study, while others were composites of items and procedures developed for earlier studies. As a whole, their use gave us a detailed, in-depth look at improvement activities at every level of schooling, and at the individuals whose contributions were critical to success. Several aspects of our instrumentation are worth noting in this summary.

Our profiling activities yielded excellent results, both for states where case studies allowed us to examine the range of policies and support mechanisms, and for practices where our Practice Profiles gave us a unique tool to describe and compare classroom use of 61 different innovations.

The technique of using branching interviews for school administrators and teachers worked well, allowing us to adapt the questions we asked based on the respondent's experience with the practice in focus. Using established items and procedures (e.g., the Levels of Use Interview and items from the /I/D/E/A/ study instruments) added validity and freed energy and resources for developing new measures.

We discovered some strengths and shortcomings of the content analysis technique. In cases where the specifics and range of responses could only be guessed initially, the technique was invaluable. This was particularly the case in the external facilitator component, where the individuals included came from a wide variety of settings, engaged in a large range of activities, and, in many cases, were discovered in situations that were unanticipated. On the other hand, using content analysis was less helpful with teachers and principals, some of whose behaviors and attitudes were more predictable, with a much more limited range. Where we ended up with a narrow range of responses, the extra resources spent in taping and coding could perhaps have been more wisely spent. In future uses of this technique, we would recommend a careful piloting of interview items, so that those with a narrower range of responses could be asked and scored in a more efficient way.

A final note: we initially attempted to coordinate design and instrumentation with the Abt study of NIE's Research and Development Utilization Program. Because their study was being conducted concurrently, and it looked at a dissemination strategy aimed at improving schools, we and the funding agencies believed coordination would be beneficial. Although we think our findings are quite compatible, and confirm each other in many specific instances, we were unable to fulfill the hopes of compatibility of instrumentation that would have allowed for some cross-study analyses. This was largely due to our opportunity to develop our own instrumentation and Abt's need to rely heavily upon data and case studies that had previously been developed on their study sites.

Sampling

The sampling strategies used in the study were aimed at providing us with a set of schools representative of those influenced by federal efforts to use dissemination to support improvement. We began by selecting a sample of states that varied in the same way as the 48 continental states on dimensions such as student population, per student expenditure, and state education agency provision for dissemination. Then we worked with lists of reported adopters and purchasers acquired from the federal and state program offices, selecting a certain number of practices to represent each program, and attempting to systematically vary our sample districts by year of adoption. Once our survey sample was selected, we chose 12 sites for our field study -- half representing NDN adoptions and the others Title IV-C development projects -- using a number of criteria, including geographic setting and year of adoption.

Our original intention was to study schools where school improvement was occurring, due to the influence of one of the selected federal or state programs. So we did not include sites that we had selected through our sampling procedure, but that we found when contacting them had either never used the practice or had discontinued use. When this occurred, we made another selection. Thus, it is important to note that ours is a sample of continuing users, of schools where a practice was adopted or developed and, years later, was still in use. This is quite different than our sample would have been, had we chose to include all those initially selected, whether or not use had ever occurred or was continuing.

There is something to be learned from the discrepancy between our originally selected sample and the one we ended up with. As discussed earlier in detail, nearly as many sites that were contacted did not participate ($N = 124$) as did ($N = 146$). Of those that did not participate, approximately 19% had discontinued use; 13% knew about the practice but had never actually used it; and 26% knew nothing about the practice. These last two figures represent inaccuracy on the part of disseminators in reporting

adoptions. The first figure (19%) connotes a relatively small attrition rate for school improvement programs based on federal support, especially given the Rand and earlier studies that found large percentages of discontinuation after funding ceased. We believe this suggests a higher rate of institutionalization, perhaps due to the maturity of the program offices, who have learned how to help increase the potential for success. We should note, however, our difficulty in locating users of BEH Marketing Program materials; we believe this suggests a need for in-person assistance if use by teachers is a program goal.

Data Collection

Our data collection efforts were both extensive and intensive. The advantages of sampling widely across the country, and of gathering data from so many individuals representing so many role groups, speak for themselves. We were able to get a well-integrated picture of what involvement in school improvement efforts meant for educators at all levels. The problems that arose from such massive data collection were many. In order to involve our many subcontractors -- taking full advantage of their expertise and previous research experience -- we used a decentralized structure. This brought coordination problems, the most troublesome of which was the continual identification of external facilitators by our local site teams, who were then added to the roster to be interviewed by our external facilitator team. Plans for cost-effective, coordinated travel by the external facilitator team thus became more complicated, since their sample appeared to shift almost daily.

Our insistence on personal visits to local school and external facilitator sites, rather than relying on mailed-out questionnaires, brought its own set of logistical headaches. We had 14 field researchers collecting data in over 250 settings, over a 9-month period. To orchestrate this effort, we had three field coordinators -- one each at The NETWORK, the Texas R&D Center, and American University -- who had many responsibilities. They: (1) arranged for visits with school and district personnel, (2) coordinated series of visits for each field researcher, (3) made travel arrangements, (4) maintained contact with field researchers to help with problems and provide moral support, and (5) set up and maintained a management system for incoming data. These people brought order to what could have been chaos, keeping data collection on time and ensuring quality control and orderly data.

The payoffs from collecting data in-person were many. The interviews provided the opportunity for the respondents to get to know the field researcher, if only briefly, to ask questions about the study, and to talk about the practice in a more casual, personal way than would have been possible using only a paper-pencil instrument. Interviewers had the opportunity to probe where responses were incomplete or unclear, to get to know

the school setting, and to clarify the purposes of the study to the respondent. An additional benefit of the personal interview was the opportunity to administer the questionnaires immediately after the interview, which greatly increased the response rate from what it would have been had the questionnaires been mailed.

Likewise, data collection for our 12-site field study was designed and implemented to best advantage. Unlike typical ethnographic work where an "ethnographer" remains on site for long periods of time, our field study team members made short, spaced visits to the sites. In between the visits, interim coding analysis occurred, which developed insights into the dynamics of each site and pointed to gaps in information across sites. We believe that this substitute for "living" at the sites -- which would not have been affordable -- was an even better way of obtaining an overall understanding of implementation and institutionalization of the new practices being used.

Data Analysis

Our survey data base and analysis procedures presented us with many challenges. The problems of mounting the large and complex data base were substantial, but they were overcome technically. We began analysis with a well-worked out design; the first steps, which were both iterative and exploratory, permitted refinement and clarification of the concepts and the measures.

We were, however, highly unrealistic in our time lines. This was largely due to the decentralized structure of our subcontractors (who were responsible for analyzing various sets of data), who had to relate through The NETWORK-based data manager to a centralized, physically remote (in Michigan) data base. This slowed both error correction and analysis. Although we felt constrained to use this system because of funding agency concern about data access, we would recommend more direct, local access to data, with at least a part-time data manager at each subcontractor location, should a similar effort be mounted in the future.

Lack of time and resources short-circuited the extensive "middle-level" analyses of data that each data analysis team would like to have conducted. Bivariate and multivariate runs, as well as studies of outliers (i.e., extreme responses) for selected variables, done prior to model testing, would have given us a deeper understanding of our sample. As it stands, we continue to have hope for additional time and resources to perform secondary analyses of the data; the data base also will be made available for others to do so.

Our field study resulted in the development of pioneering and extremely productive analysis methods for qualitative data (Miles & Huberman, 1983). Furthermore, the repeated contact between survey and field study data analysis teams, although not as frequent as we would have liked, helped us improve both analysis

efforts. In the case of Miles and Huberman, who worked on both data sets, the contribution was most evident.

To summarize our data analysis experience, we made every attempt to coordinate and focus the energies of many experienced and talented individuals, to respond to a concise yet complicated set of research questions about the dynamics of school improvement. The trade-offs were many, particularly in terms of logistics and organization. On the other hand, the payoffs also were great, considering the substantial and sound results we were able to produce, and the understandings that we believe add significantly to what was known previously.

So ends our stage setting for the Study of Dissemination Efforts Supporting School Improvement. In the volumes that follow, we unfold the findings, from descriptions of what we found in the world where school improvement is happening, to our analyses of what contributes to the success of those efforts.

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